BEFORE YOU DIG CALL
1-800-257-7777 OR DIAL 811

STILLMEADOW STREAM & OUTFALL RESTORATION
CONSTRUCTION DRAWINGS
HARFORD COUNTY, MARYLAND

GENERAL NOTES

1. TOPOGRAPHIC SURVEY WAS PERFORMED BY BAYLAND CONSULTANTS AND DESIGNERS, INC. IN MAY AND JUNE 2017. COORDINATES SHOWN HERE ON ARE REFERRED TO MARYLAND COORDINATE SYSTEM (NAD 83/1991) AND ARE BASED ON RTK GPS VIRTUAL NETWORK. ELEVATIONS SHOWN HERE ON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAD 88) AND ARE BASED ON RTK GPS VIRTUAL NETWORK.

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
STILLMEADOW DRIVE				
TPS 3	633,076.15	1,497,499.06	6.62	REBAR/CAP
TPS 6	632,922.65	1,497,873.11	17.29	REBAR/CAP
TPS 11	632,843.18	1,498,479.56	53.97	REBAR/CAP
ROXBURY COURT				
TPS 3	632,647.91	1,499,008.70	88.24	REBAR/CAP
TPS 5	632,012.87	1,498,848.29	82.36	REBAR/CAP
TPS 7	632,019.93	1,498,602.61	85.46	REBAR/CAP

2. CONTOURS SHOWN OUTSIDE LIMIT OF WORK ARE BASED ON HARFORD COUNTY 2013 GIS TOPOGRAPHY.
3. EXISTING UTILITIES SHOWN OUTSIDE THE LIMIT OF WORK ARE BASED ON HARFORD COUNTY GIS & HAVE NOT BEEN FIELD LOCATED.
4. PROPERTY LINES AND EASEMENTS SHOWN ARE BASED ON HARFORD COUNTY 2017 CADASTRAL DATA
5. ONLY TREES WITH A 12" DIAMETER OR GREATER WITHIN THE LIMITS OF WORK WERE FIELD LOCATED.
6. WETLAND DELINEATION WAS PERFORMED BY BAYLAND CONSULTANTS AND DESIGNERS, INC IN JUNE 2017.
7. THE STREAM IS AN UNNAMED TRIBUTARY TO FOSTER BRANCH (GUNPOWDER WATERSHED MD BASIN CODE: 02130801) AND IS A USE I STREAM WITH A STREAM CLOSURE PERIOD OF MARCH 1ST TO JUNE 15TH.
8. FEMA FIRMS FM24025C0263E AND FM24025C0264E EFFECTIVE APRIL 19, 2106 SHOWS THAT NO PROPOSED WORK IS WITHIN THE 100-YEAR FLOODPLAIN.
9. THE PROJECT IS LOCATED WITHIN THE CRITICAL AREA.

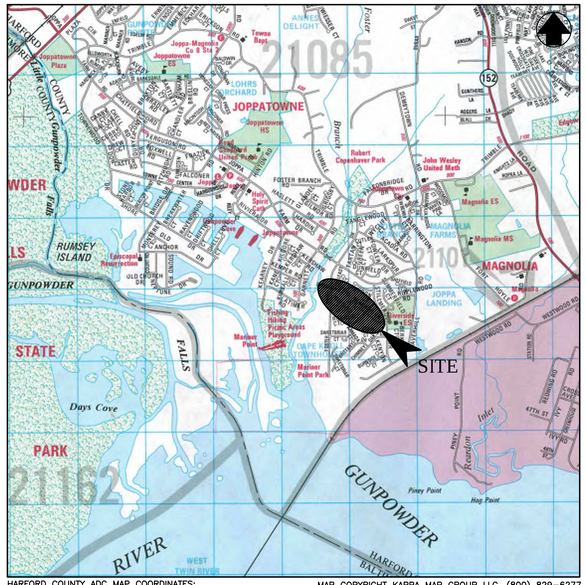
GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE HARFORD COUNTY STANDARD SPECIFICATIONS OR DETAILS FOR CONSTRUCTION UNLESS OTHERWISE NOTED. THE STATE HIGHWAY ADMINISTRATION'S HIGHWAY'S STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS AND THE BOOK OF STANDARDS FOR HIGHWAY & INCIDENTAL STRUCTURES SHALL BE USED IF NO HARFORD COUNTY STANDARD OR DETAIL EXIST.
2. THE EXISTING UTILITIES AND OBSTRUCTIONS SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND SHALL BE VERIFIED BY THE CONTRACTOR TO THEIR SATISFACTION PRIOR TO CONSTRUCTION. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT EXISTING SERVICES AND MAINS AND ANY DAMAGE TO THEM SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS OWN EXPENSE.
3. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" AT 1-800-257-7777 A MINIMUM OF 48 HOURS IN ADVANCE OF ANY EXCAVATION, BORING, PILE DRIVING AND/OR DIGGING FOR THE LOCATION OF GAS, ELECTRIC, TELEPHONE, WATER AND SEWER LINES.
4. MECHANICAL EXCAVATION SHALL NOT BE CONDUCTED WITHIN 3 FEET HORIZONTALLY OR WITHIN 2 FEET VERTICALLY OF KNOWN UTILITY LOCATIONS. HAND OR SOFT DIGGING SHALL BE DONE WITHIN THESE LIMITS. UNDERGROUND UTILITIES, ONCE UNCOVERED, SHALL BE PROTECTED FROM BEING STRUCK BY EQUIPMENT.
5. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NATURALLY BE REQUIRED TO COMPLETE THE PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY TO COMPLETE SUCH WORK.
6. ALL TREES WITH A DIAMETER GREATER THAN 12 INCHES WITHIN THE LIMIT OF DISTURBANCE SHALL NOT BE REMOVED UNLESS PRIOR APPROVAL IS OBTAINED OR EXPLICITLY SHOWN ON THE PLANS TO BE REMOVED. ALL TREES TO REMAIN WITHIN THE LIMIT OF DISTURBANCE THAT ARE NOT TO BE REMOVED SHALL BE PROTECTED.
7. ALL FILL AREAS SHALL BE CLEANED OF ALL VEGETATION AND DEBRIS, SCARIFIED TO A MINIMUM DEPTH OF 12 INCHES PRIOR TO THE PLACEMENT OF FILL. FILL MATERIAL SHALL BE PLACED IN CONTROLLED LIFTS WITH A MAXIMUM THICKNESS OF 8" PRIOR TO COMPACTION THAT IS CONTINUOUS OVER THE ENTIRE AREA OF FILL. EACH LAYER OF FILL SHALL BE COMPACTED WITH THE MINIMUM NUMBER OF PASSES NECESSARY TO PRODUCE A FULL ASYMPTOTIC COMPACTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS TESTING INCLUDING CONCRETE, FLOWABLE FILL, HOT MIX ASPHALT AND FILL COMPACTION. ALL MATERIALS TESTING SHALL BE PERFORMED BY THE CONTRACTOR AND SHALL BE COMPENSATED FOR AS PART OF THE APPROPRIATE PAY ITEM.
9. SEE STANDARD GEOTECHNICAL NOTES FOR FILL COMPACTION TESTING REQUIREMENTS.
10. ALL DISTURBED AREAS SHALL HAVE PERMANENT OR TEMPORARY STABILIZATION COMPLETED WITHIN:

    10.A. END OF THE WORK DAY FOR AREAS WITHIN WATERWAYS.
    10.B. THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1 AND TO THE SURFACE OF ALL PERIMETER SEDIMENT CONTROLS.
    10.C. SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS.
    10.D. ALL STABILIZATION MUST BE IN ACCORDANCE WITH MARYLAND DEPARTMENT OF AGRICULTURE (MDA) FERTILIZER LAW.

11. ALL DISTURBED AREAS WITH SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH 100% BIODEGRADABLE SOIL STABILIZATION MATTING THAT HAS A SUFFICIENT DESIGN SHEAR STRESS FOR THE APPLICATION OR AS SHOWN ON THE APPROVED SEDIMENT AND EROSION CONTROL PLANS.
12. ALL PERMANENTLY STABILIZED AREAS SHALL INCLUDE A MINIMUM OF 4" OF TOPSOIL PER THE 2011 MDE SPECIFICATIONS.
13. ALL STAKING, RESTAKING, AND CUT SHEETS SHALL BE PERFORMED BY A REGISTERED LAND SURVEYOR OR PROFESSIONAL ENGINEER AT THE CONTRACTOR'S EXPENSE.
14. ALL CONSTRUCTION TO BE PERFORMED IN ACCORDANCE WITH STATE OF MARYLAND OCCUPATIONAL SAFETY LAWS.
15. CONTRACTOR MUST ENSURE THAT COPIES OF FEDERAL, STATE, AND CITY PERMITS ARE POSTED ON SITE PRIOR TO THE START OF ANY WORK.
16. ALL ROADS SHALL BE CLEANED AND CLEARED BY THE END OF EACH DAY. ANY MUD OR ROCKS TRACKED ON THE ROADWAYS SHALL BE SWEPT BEFORE THE END OF SHIFT EACH DAY.
17. CONTRACTOR SHALL RESTORE ALL AREAS IMPACTED BY CONSTRUCTION ACTIVITY. THIS SHALL INCLUDE BUT IS NOT LIMITED TO GRASS AREAS, ROADS, PAVED AREAS, ETC...

SHEET LIST



HARFORD COUNTY ADC MAP COORDINATES:
MAP 28 GRID F-6, F-7, G-6, G-7

LOCATION MAP
SCALE: 1"=2000'

DEVELOPER

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS AND STORMWATER MANAGEMENT
212 SOUTH BOND STREET, 3RD FLOOR
BEL AIR, MARYLAND 21014
CONTACT: GLEN HEBEL
PH: (410) 638-3509 EXT 1344

ENGINEER

BAYLAND CONSULTANTS & DESIGNERS, INC.
7455 NEW RIDGE ROAD, SUITE T
HANOVER, MARYLAND 21076
PH: 410-694-9401
FAX: 410-694-9405

LEGEND

TRAVERSE POINT TPS# 3
EX. PROPERTY LINE/RIGHT-OF-WAY
EX. MAJOR CONTOUR 70
EX. MINOR CONTOUR 69
EX. TOP OF BANK TOB
EX. 25' WETLAND BUFFER WB
EX. WIRE FENCE X
EX. PLASTIC FENCE
EX. WOOD FENCE
EX. THALWEG
EX. 100-YR FEMA FLOODPLAIN FEMA
EX. 100-YR FLOODPLAIN
EX. CRITICAL AREA
EX./PR. DRAINAGE AREA
EX. SOIL BoC
EX. SEWER & MANHOLE EX. 12" SG EX. 12" SG
EX. STORM DRAIN, INLET, & MANHOLE EX. 12" SD SD
EX. STORM DRAIN TO BE REMOVED
EX. WATER & VALVE

EX. TREE
EX. TREE TO BE REMOVED
EX. TREE TO BE PROTECTED
EX. FIRE HYDRANT
EX. SIGN
EX. LIGHT POLE
EX. TELEPHONE PEDESTAL
EX. BORING
EX. WETLANDS
EX. RIPRAP
PR. RIPRAP
PR. LIMITS OF CLEARING
PR. MAJOR CONTOUR 70
PR. MINOR CONTOUR 69
PR. ODD CONTOUR 68.5
PR. 100-YR FLOODPLAIN
PR. BANK FULL BF
PR. STREAM ℄ 0+00 0+15

PR. STORM DRAIN
PR. SILL BOULDER CONTROL STRUCTURE
PR. SPSC RIFFLE/POOL
PR. LOG-BOULDER STEP\POOL
PR. RIFFLE/POOL

SEE SHEET 2 FOR SITE INFORMATION AND SITE ANALYSIS

OWNER'S/DEVELOPER'S CERTIFICATION

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAY OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

OWNER/DEVELOPER SIGNATURE DATE

PRINTED NAME

ENGINEER'S CERTIFICATION

I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HARFORD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HARFORD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

ENGINEER'S SIGNATURE DATE

CHRISTOPHER STEPP 31146
PRINTED NAME MD P.E. REGISTRATION NO.

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILELY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

ENGINEER'S SIGNATURE DATE

CHRISTOPHER STEPP 31146
PRINTED NAME MD P.E. REGISTRATION NO.

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 33146, EXPIRATION DATE: 01/14/2019.

HARFORD SOIL CONSERVATION DISTRICT
SMALL POND APPROVAL

DISTRICT OFFICIAL DATE

TECHNICAL REVIEW FOR DISTRICT

HARFORD COUNTY DEPT. OF PUBLIC WORKS DATE

POND DESIGN CERTIFICATION FOR SMALL POND NUMBER

I CERTIFY THAT THIS DESIGN PLAN FOR THE CONSTRUCTION OF THE EMBANKMENT AND/OR EXCAVATED POND(S) REPRESENTS A HAZARD CLASS "A" POND(S) AND WAS DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE USDA, NATURAL RESOURCES CONSERVATION SERVICE – MARYLAND STANDARDS AND SPECIFICATIONS FOR PONDS (MD-378). I HAVE REVIEWED THIS PLAN WITH THE OWNER/DEVELOPER.

SIGNATURE
NAME CHRISTOPHER STEPP
ADDRESS 7455 NEW RIDGE ROAD, SUITE T
HANOVER, MD 21076
MD P.E. LICENSE # 33146
PHONE # (410) 694-9401

CAPITAL PROJECT APPROVAL

REVIEWED & APPROVAL RECOMMENDED
PROJECT ENGINEER DATE

APPROVAL RECOMMENDED
CHIEF ENGINEER DATE

APPROVAL RECOMMENDED
DEPUTY DIRECTOR OF PUBLIC WORKS DATE

APPROVAL
DIRECTOR OF PUBLIC WORKS DATE

SWM APPROVAL

HARFORD COUNTY BILLING NUMBER 99974
THESE PLANS HAVE BEEN REVIEWED BY HARFORD COUNTY AND MEET THE TECHNICAL REQUIREMENTS FOR STORMWATER MANAGEMENT ONLY.

REVIEWED & APPROVAL RECOMMENDED
WATER RESOURCES ENGINEERING DATE

APPROVAL RECOMMENDED
CHIEF ENGINEER DATE

APPROVAL RECOMMENDED
DEPUTY DIRECTOR OF PUBLIC WORKS DATE

APPROVAL
DIRECTOR OF PUBLIC WORKS DATE

60% DESIGN

EG-SWMENG-_____-_____ #_____

S/C PLAN # _____ GRA # _____-_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

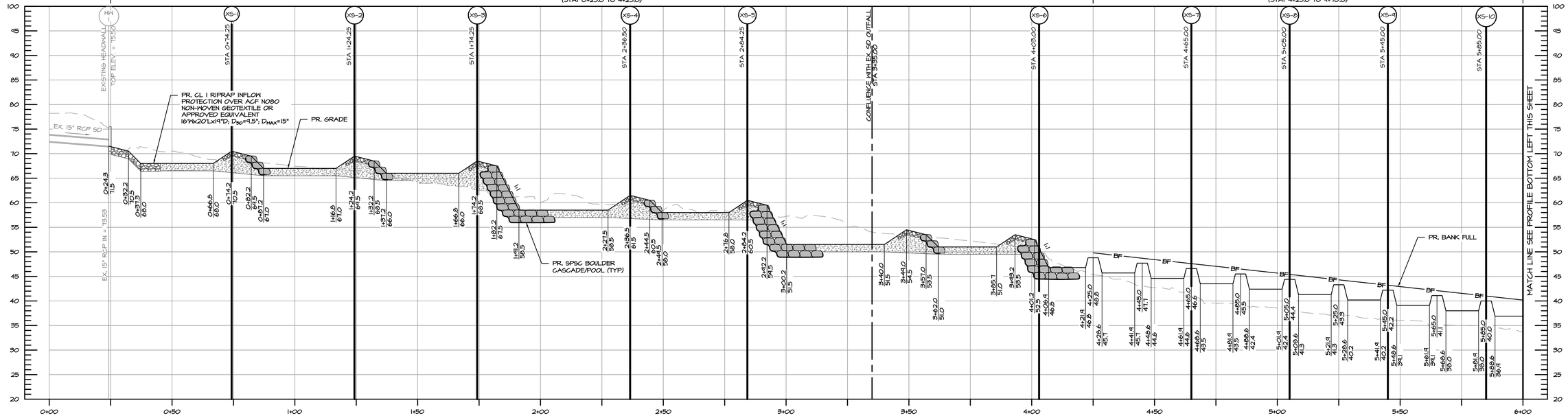
STILLMEADOW STREAM & OUTFALL RESTORATION
COVER SHEET

DRAWN BY: JP
DESIGNED BY: JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 1 OF 43
DATE : 06/05/18

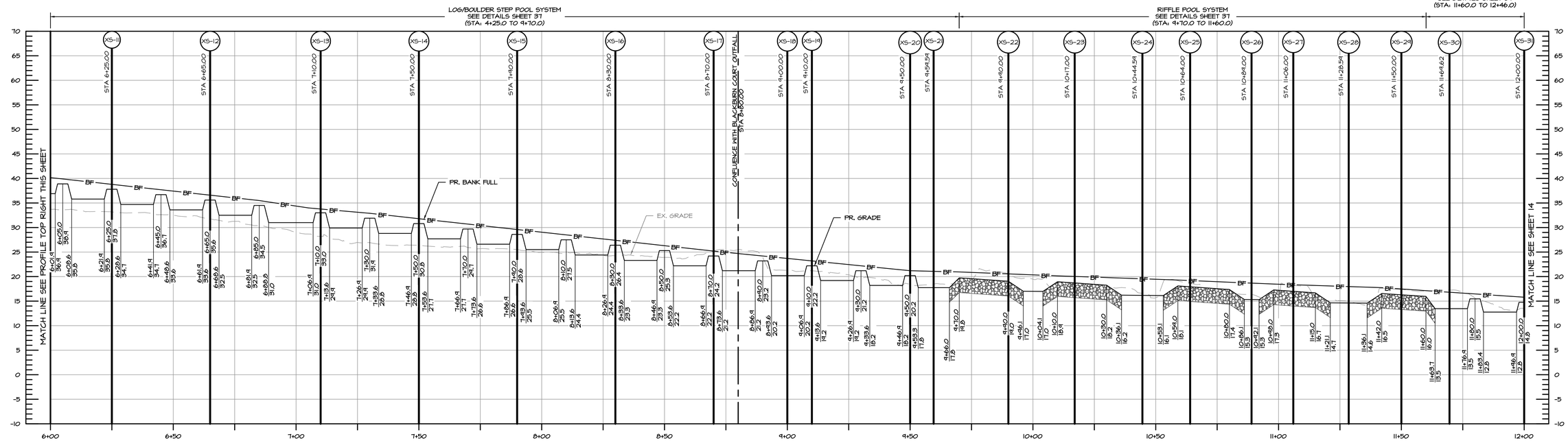
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_OVERALL\CAD Files\Sheet Files\4_3801_COV01.dwg



PROFILE C/L PR. STILLMEADOW STA: 0+00 TO STA: 6+00

SCALE: HORZ. 1" = 20'
VERT. 1" = 10'



PROFILE C/L PR. STILLMEADOW STA: 6+00 TO STA: 12+00

SCALE: HORZ. 1" = 20'
VERT. 1" = 10'

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE PROFILES

DRAWN BY: BF/EM/JP
DESIGNED BY: MKB/RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 13 OF 43
DATE : 06/05/18

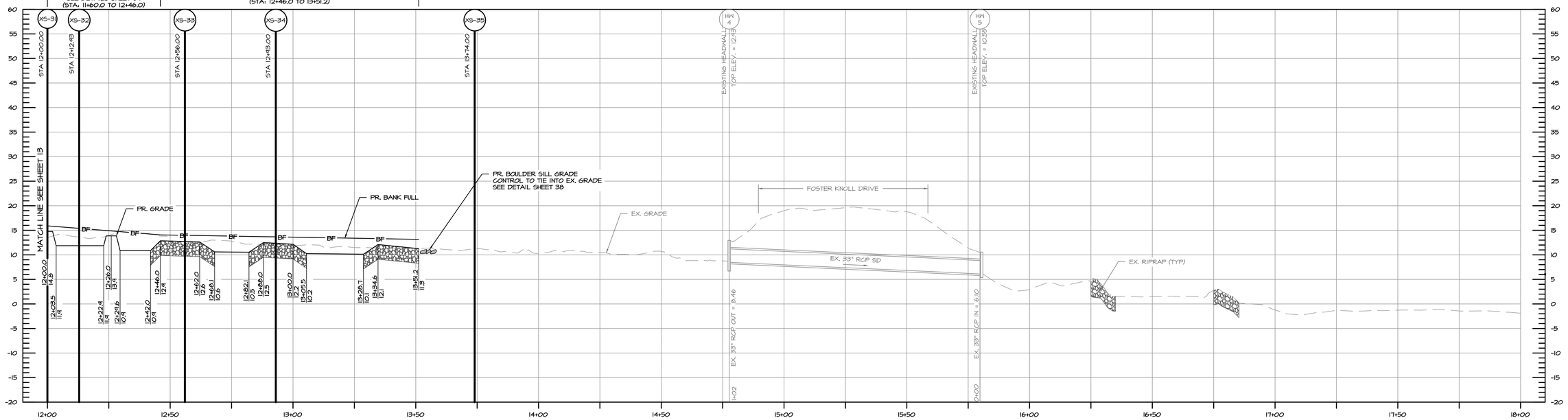
EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

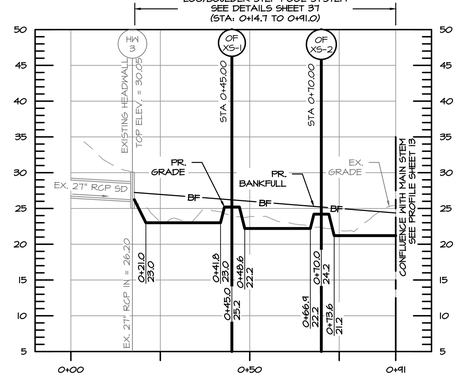
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_PROF01.dwg



PROFILE C/L PR. STILLMEADOW STA: 12+00 TO STA: 18+00

SCALE: HORZ. 1" = 20'
VERT. 1" = 10'



PROFILE C/L PR. BLACKBURN CT STA: 0+00 TO STA: 0+91

SCALE: HORZ. 1" = 20'
VERT. 1" = 10'

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE PROFILES

DRAWN BY: EM/BF/JP
DESIGNED BY: RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 14 OF 43
DATE : 06/05/18

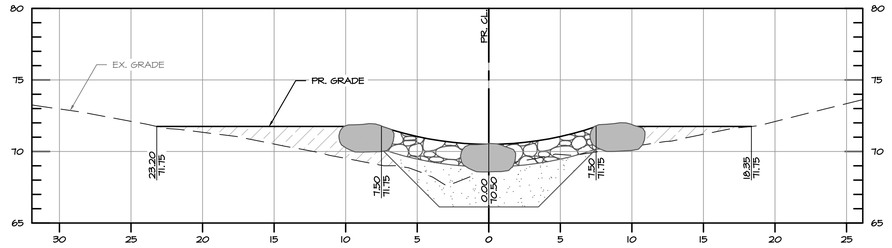
EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

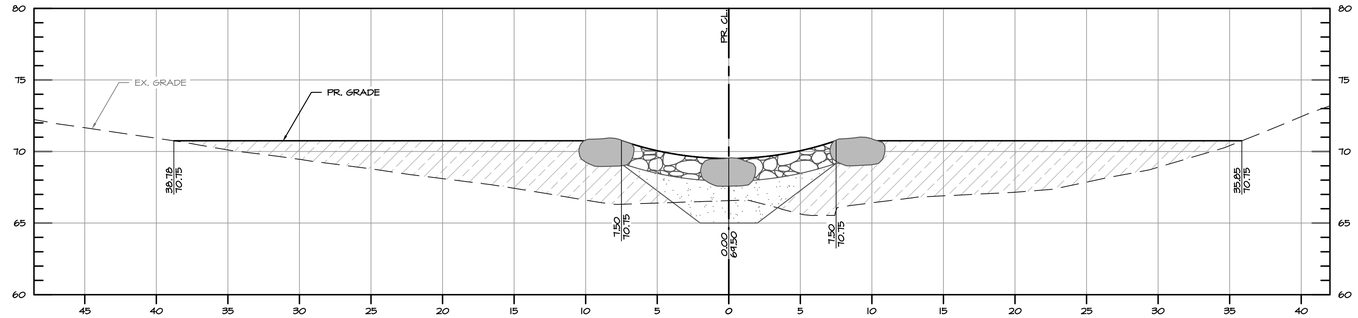
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_PROF02.dwg



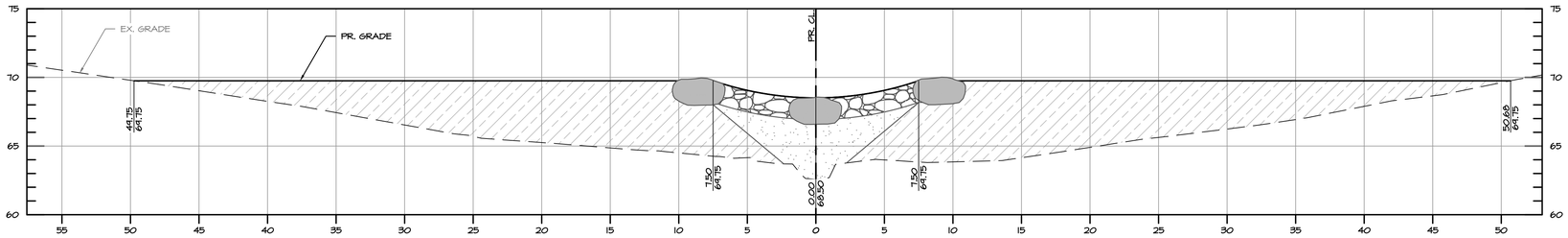
PROPOSED ALIGNMENT SECTION XS-1 STA 0+74

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



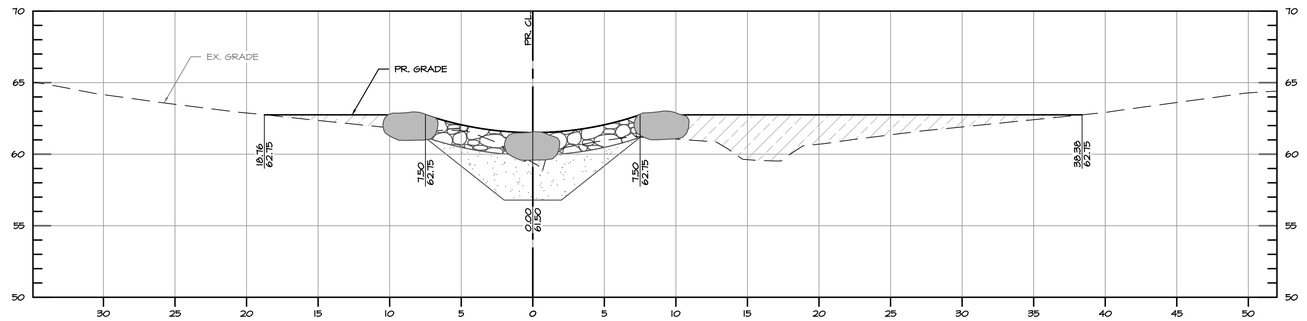
PROPOSED ALIGNMENT SECTION XS-2 STA 1+24

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-3 STA 1+74

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-4 STA 2+37

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

CROSS SECTION LEGEND

EX. GRADE
PR. GRADE
PR. SPSC COBBLE (d_{50}=6")
PR. SPSC SAND/WOODCHIP MIX
PR. SPSC/STEP POOL BOULDERS
PR. FILTER FABRIC
PR. SUITABLE FILL MATERIAL

NOTE: ROCKS SHOWN ON CROSS SECTION VIEWS ARE SYMBOLIC AND DO NOT REPRESENT INDIVIDUAL STONES. SEE ROCK SIZING TABLES SHEET 36 FOR ACTUAL ROCK DIMENSIONS.

60% DESIGN

EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

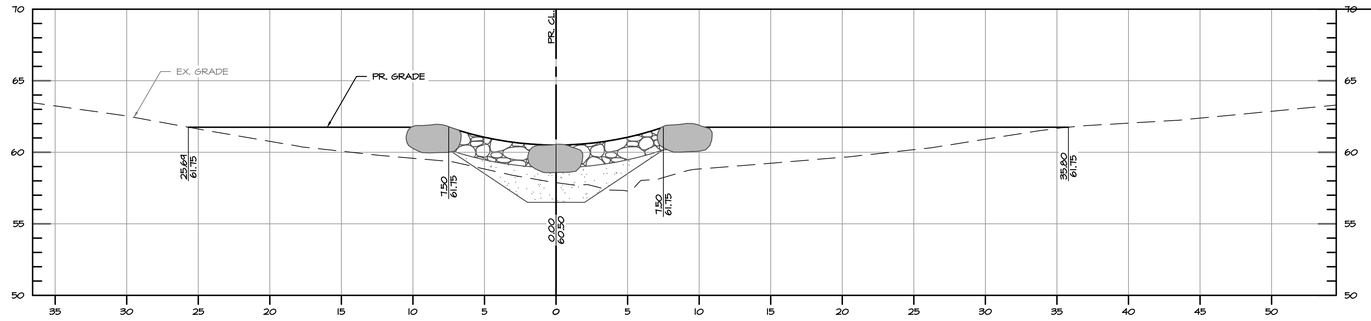
DRAWN BY: BF/EM/DL
DESIGNED BY: MKB
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 15 OF 43
DATE : 06/05/18

SCALE 1 inch

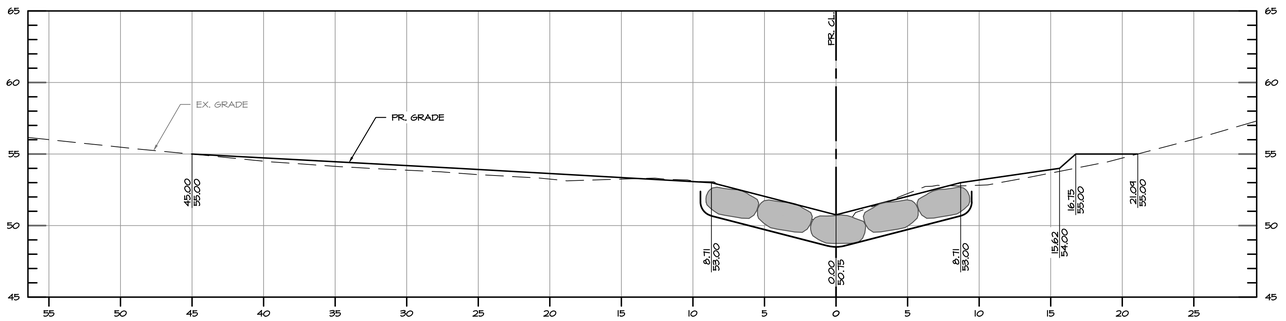
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC01.dwg



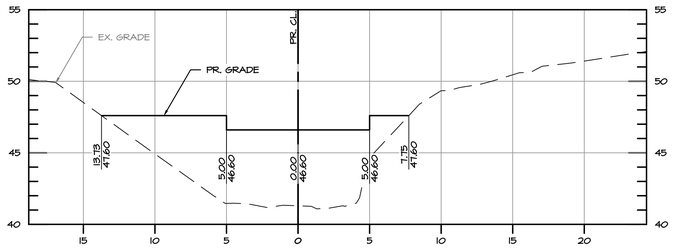
PROPOSED ALIGNMENT SECTION XS-5 STA 2+84

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



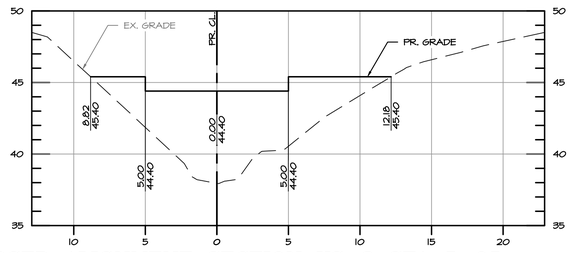
PROPOSED ALIGNMENT SECTION XS-6 STA 4+03

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-7 STA 4+65

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-8 STA 5+05

60% DESIGN

CROSS SECTION LEGEND

EX. GRADE
PR. GRADE
PR. SPSC COBBLE (d_{50}=6")
PR. SPSC SAND/WOODCHIP MIX
PR. SPSC/STEP POOL BOULDERS
PR. FILTER FABRIC
PR. SUITABLE FILL MATERIAL

NOTE: ROCKS SHOWN ON CROSS SECTION VIEWS ARE SYMBOLIC AND DO NOT REPRESENT INDIVIDUAL STONES. SEE ROCK SIZING TABLES SHEET 36 FOR ACTUAL ROCK DIMENSIONS.

EG-SWMENG-_____-_____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

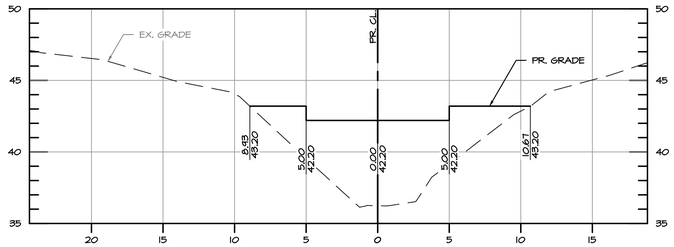
DRAWN BY: EM/BF/DL
DESIGNED BY: MKB/RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 16 OF 43
DATE : 06/05/18

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

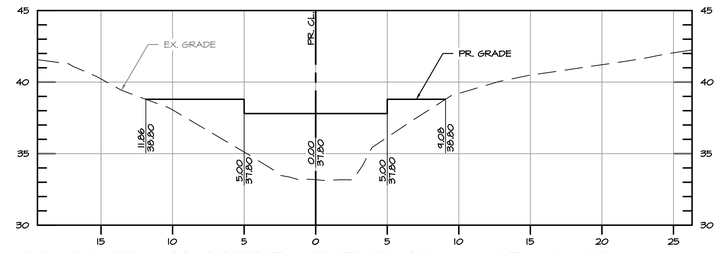
SCALE 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC02.dwg



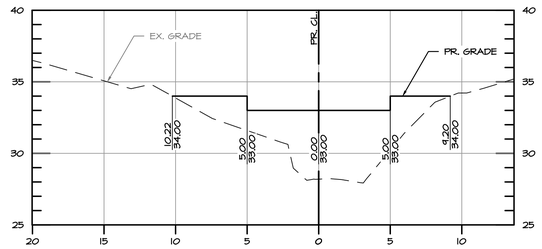
PROPOSED ALIGNMENT SECTION XS-9 STA 5+45

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



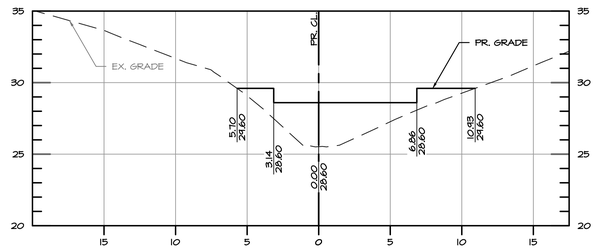
PROPOSED ALIGNMENT SECTION XS-11 STA 6+25

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



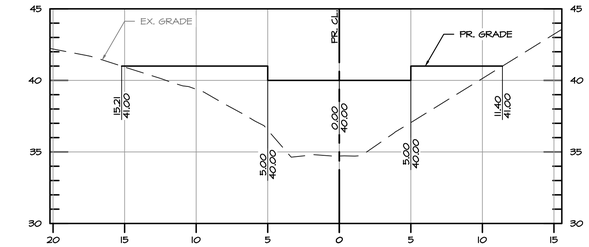
PROPOSED ALIGNMENT SECTION XS-13 STA 7+10

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



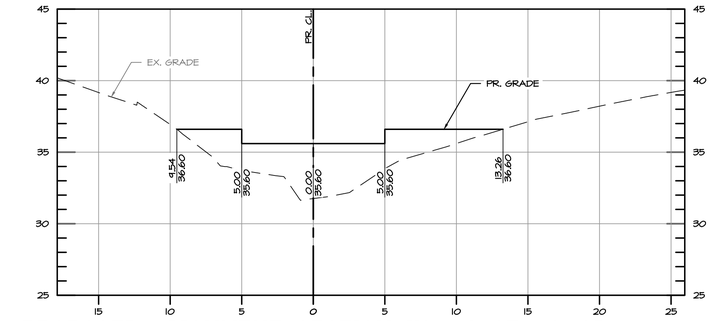
PROPOSED ALIGNMENT SECTION XS-15 STA 7+90

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



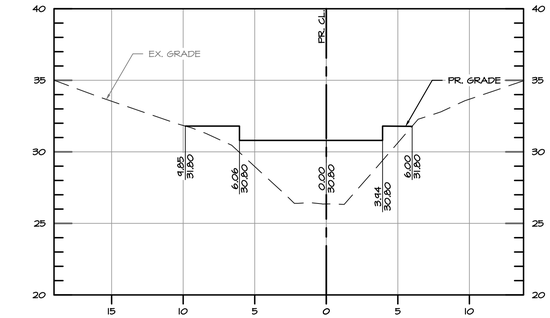
PROPOSED ALIGNMENT SECTION XS-10 STA 5+85

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



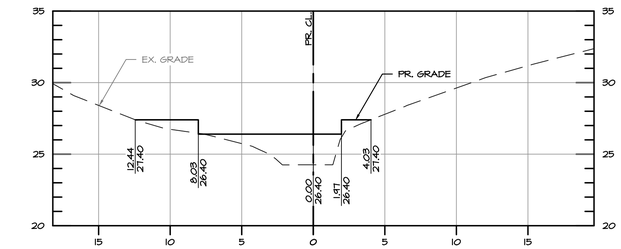
PROPOSED ALIGNMENT SECTION XS-12 STA 6+65

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-14 STA 7+50

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-16 STA 8+30

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

DRAWN BY: EM/DL
DESIGNED BY: RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 17 OF 43
DATE : 06/05/18

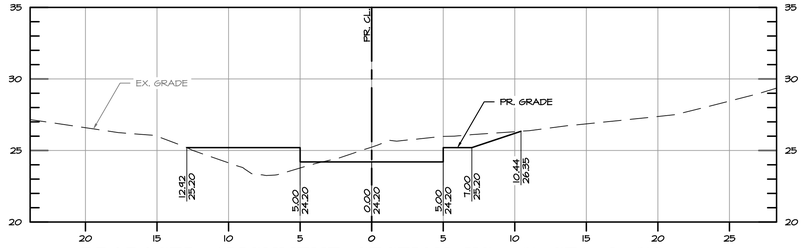
EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

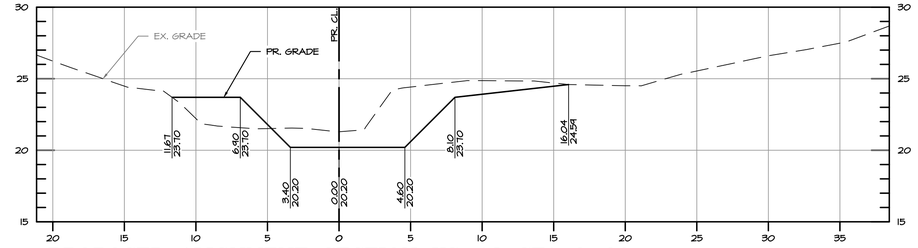
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE - 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC03.dwg



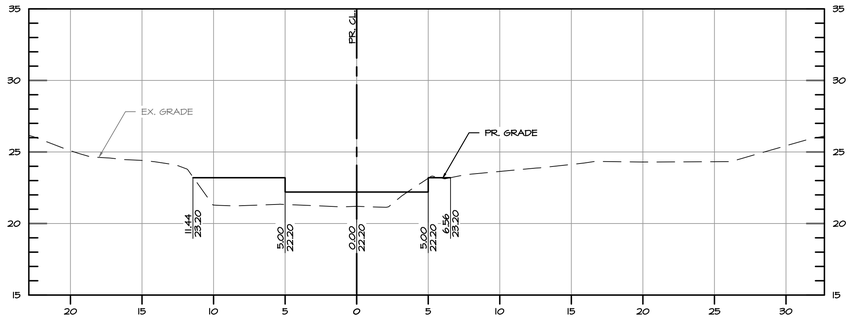
PROPOSED ALIGNMENT SECTION XS-17 STA 8+70

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



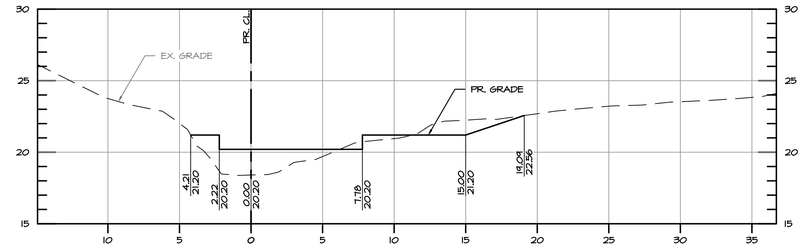
PROPOSED ALIGNMENT SECTION XS-18 STA 9+00

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



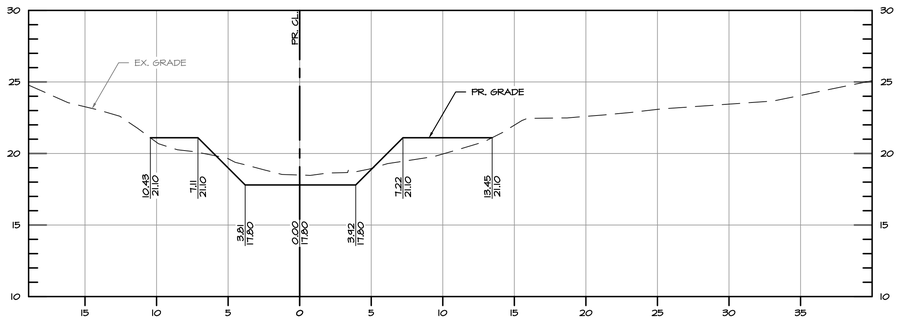
PROPOSED ALIGNMENT SECTION XS-19 STA 9+10

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



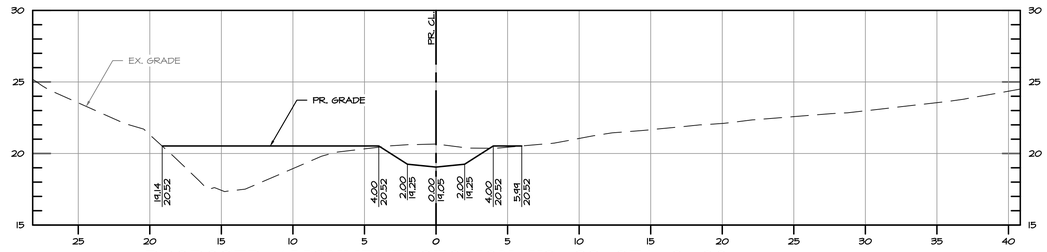
PROPOSED ALIGNMENT SECTION XS-20 STA 9+50

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-21 STA 9+60

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-22 STA 9+90

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

DRAWN BY: EM/DL
DESIGNED BY: RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 18 OF 43
DATE : 06/05/18

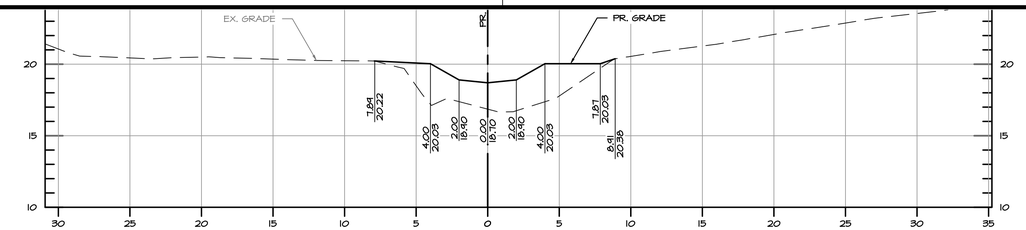
EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

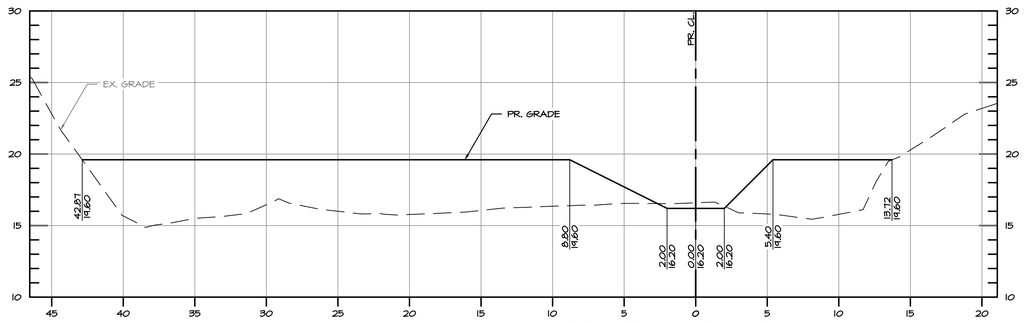
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC04.dwg

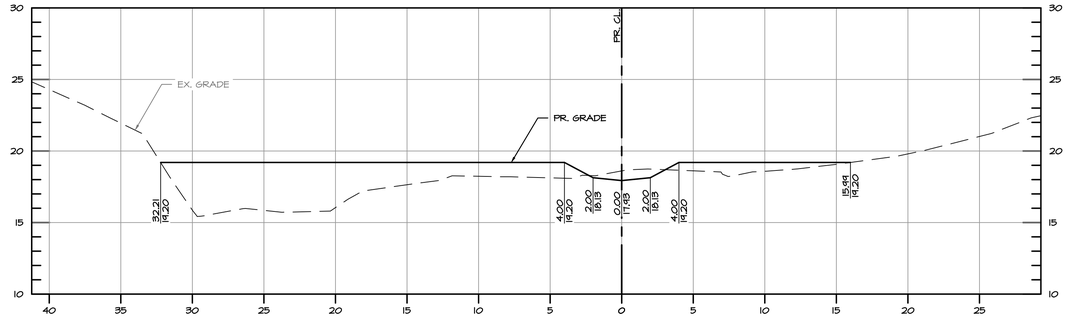


PROPOSED ALIGNMENT SECTION XS-23 STA 10+17

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

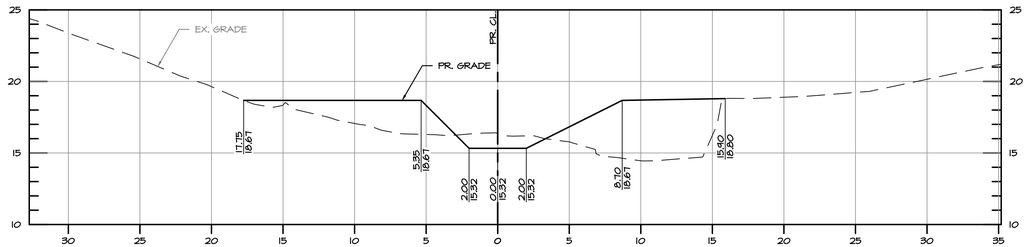


PROPOSED ALIGNMENT SECTION XS-24 STA 10+45



PROPOSED ALIGNMENT SECTION XS-25 STA 10+64

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-26 STA 10+89

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

DRAWN BY: EM/DL
DESIGNED BY: RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 19 OF 43
DATE : 06/05/18

EG-SWMENG-_____-_____ #_____

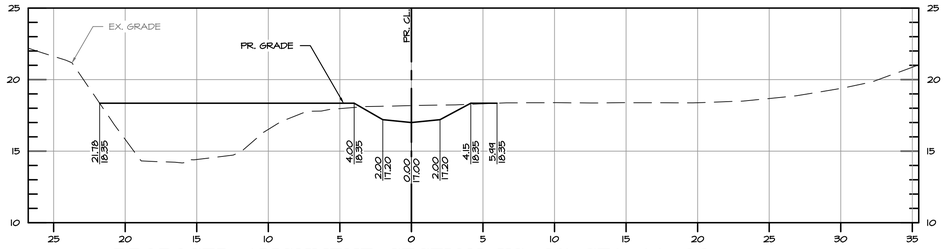
CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

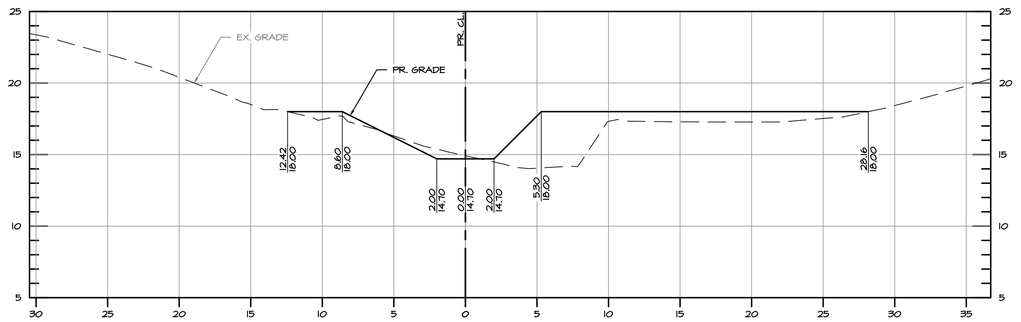
SCALE 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC05.dwg

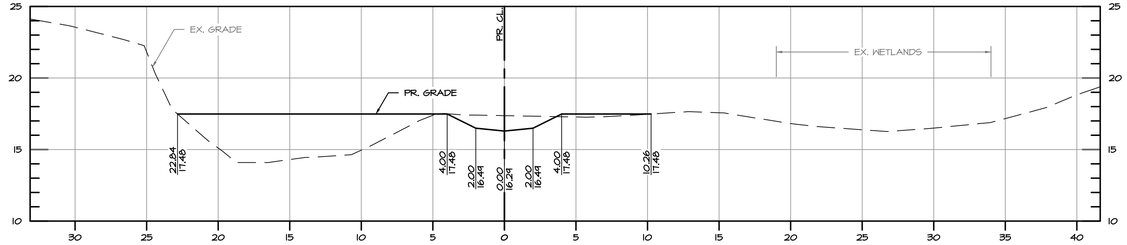


PROPOSED ALIGNMENT SECTION XS-27 STA 11+06

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

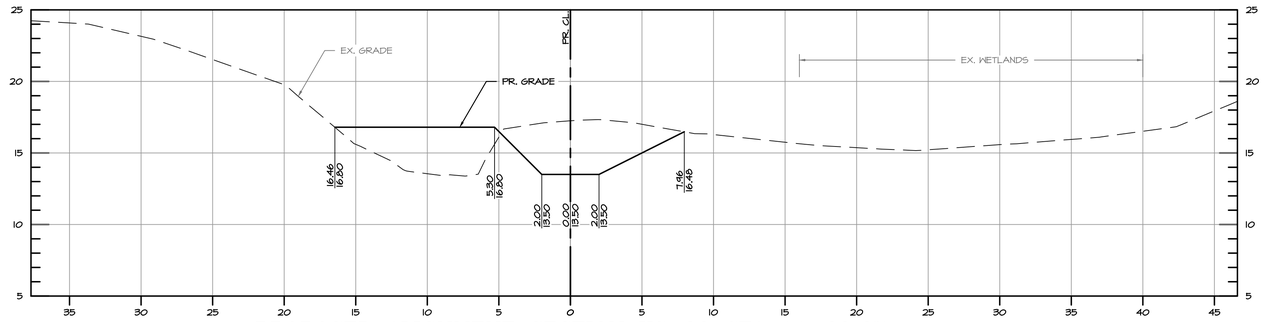


PROPOSED ALIGNMENT SECTION XS-28 STA 11+29



PROPOSED ALIGNMENT SECTION XS-29 STA 11+50

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-30 STA 11+69.67

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

DRAWN BY: EM/DL
DESIGNED BY: RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 20 OF 43
DATE : 06/05/18

EG-SWMENG-_____-_____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

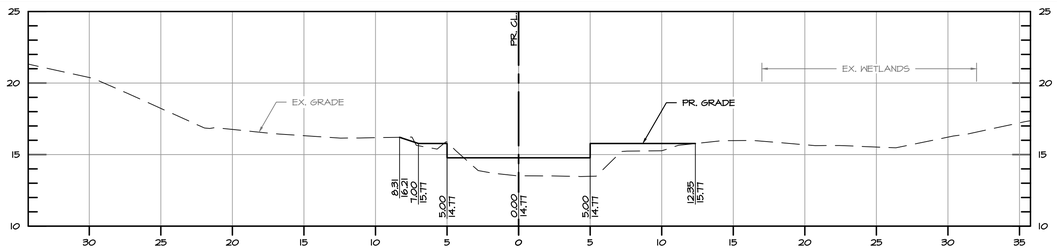
BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com

BAYLAND JOB NO. 4_3801

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

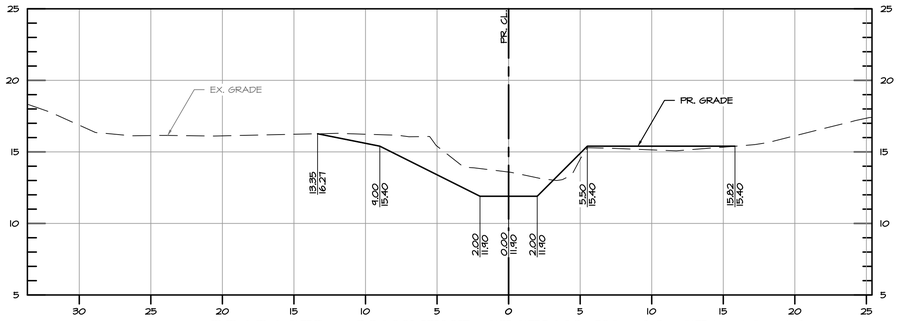
SCALE: 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC06.dwg



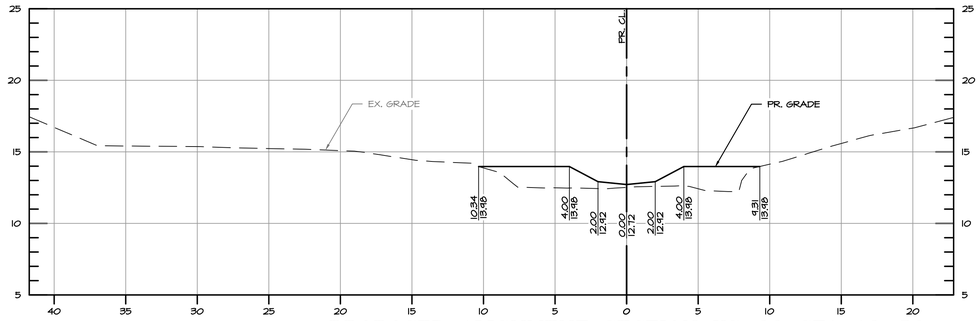
PROPOSED ALIGNMENT SECTION XS-31 STA 12+00

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



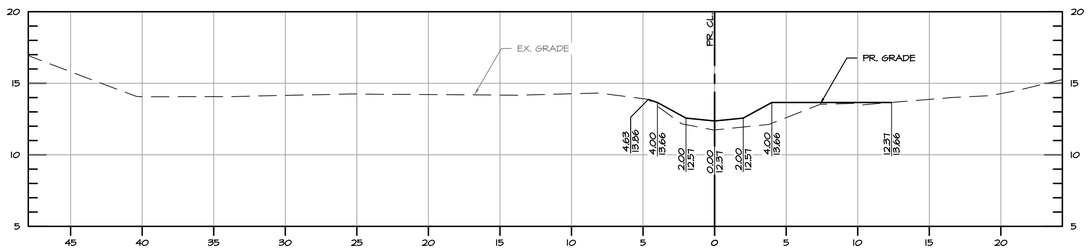
PROPOSED ALIGNMENT SECTION XS-32 STA 12+13

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-33 STA 12+56

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PROPOSED ALIGNMENT SECTION XS-34 STA 12+93

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

60% DESIGN

EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com

BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

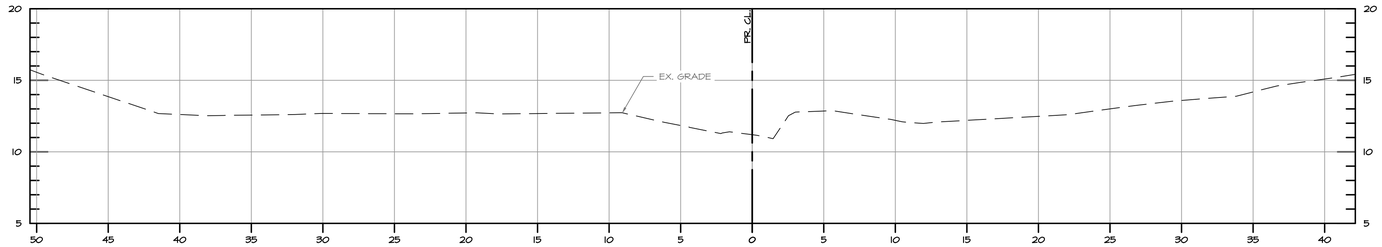
DRAWN BY: EM/DL
DESIGNED BY: RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 21 OF 43
DATE : 06/05/18

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

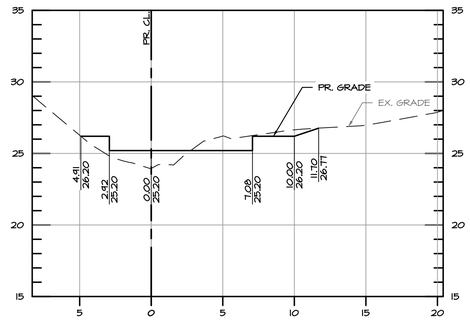
SCALE: 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC07.dwg



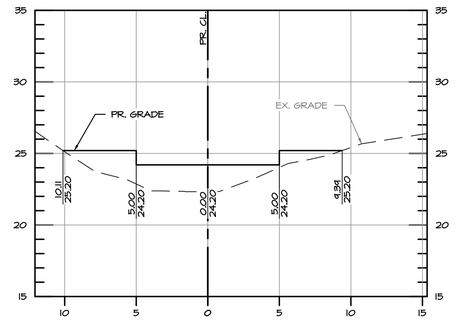
PROPOSED ALIGNMENT SECTION XS-35 STA 13+74

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PR. BLACKBURN CT SECTION XS-1 STA 0+45

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'



PR. BLACKBURN CT SECTION XS-2 STA 0+70

HORIZONTAL: 1" = 5'
VERTICAL: 1" = 5'

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE CROSS SECTIONS

EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

DRAWN BY: EM/DL
DESIGNED BY: RP/JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 22 OF 43
DATE : 06/05/18

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

SCALE 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_XSEC08.dwg

BUFFER MANAGEMENT PLAN CALCULATIONS

STEP 1: ESTABLISHMENT OR MITIGATION

DISTURBANCE TO THE 100-FOOT AND/OR EXPANDED BUFFER? (YES / NO)
IF YES, MITIGATION IS REQUIRED, PROCEED TO STEP 2. OTHERWISE, SKIP TO STEP 5.

SELECT	ACTIVITY	ACTION
	PROJECT COMPLETELY OUTSIDE BUFFER, NO BUFFER IMPACTS	ESTABLISHMENT
X	DISTURBANCE TO BUFFER OR VEGETATION REMOVAL IN BUFFER	MITIGATION
	SOME DISTURBANCE IN BUFFER AND SOME OUTSIDE BUFFER	ESTABLISHMENT & MITIGATION

STEP 2, 3 & 4: DETERMINING MITIGATION FOR WORK IN THE BUFFER

SELECT	ACTIVITY	MITIGATION RATIO
X	SHORE EROSION CONTROL*	1:1
	RIPARIAN WATER ACCESS (TEMPORARY DISTURBANCE)	1:1
	RIPARIAN WATER ACCESS (PERMANENT DISTURBANCE)	2:1
	WATER-DEPENDENT FACILITIES	2:1
	VARIANCE	3:1
	VIOLATION	4:1

*RESTORATION ACTIVITY PROPOSED TO REDUCE EROSION THOUGH CONTROLLED CONVEYANCE AND TREATMENT OF STORMWATER RUNOFF.

MITIGATION CALCULATIONS	
DISTURBANCE AREA	**AREA, SF**
TOTAL DISTURBANCE IN THE BUFFER	48,565
SHORE EROSION CONTROL DISTURBANCE RATIOS	
PERMANENT (1:1)	0
TEMPORARY (1:1)	48,565
TOTAL MITIGATION REQUIRED FOR DISTURBANCE	48,565
TREE REMOVAL MITIGATION (BASED ON CANOPY REDUCTION)*	
19.3" DBH TREE (TR49)	607
19.3" DBH TREE (TR53)	569
13.1" DBH TREE (TR54)	955
16.7" DBH TREE (TR72)	380
18.5" DBH TREE (TR73)	52
13.2" DBH TREE (TR74)	99
27.7" DBH TREE (TR80)	673
18.7" DBH TREE (TR85)	53
24.2" DBH TREE (TR87)	963
13.4" DBH TREE (TR148)	66
13.2" DBH TREE (TR161)	802
13.0" DBH TREE (TR234)	56
13.0" DBH TREE (TR236)	199
18.7" DBH TREE (TR240)	44
15.4" DBH TREE (TR241)	158
13.9" DBH TREE (TR242)	26
TOTAL MITIGATION REQUIRED FOR TREE REMOVAL	5,702
TOTAL MITIGATION REQUIRED	
TOTAL MITIGATION REQUIRED FOR DISTURBANCE	48,565
TOTAL MITIGATION REQUIRED FOR TREE REMOVAL	5,702
TOTAL MITIGATION REQUIRED	54,267

*MITIGATION REQUIREMENTS FOR TREE REMOVAL HAVE BEEN ADJUSTED TO REFLECT THE REDUCTION OF FOREST CANOPY CREATED DUE TO THE TREE REMOVAL.

STEP 5: ESTABLISHMENT FOR DEVELOPMENT

ESTABLISHMENT REQUIRED? (YES / NO) **
YEAR LOT CREATED: N/A

SELECT	DEVELOPMENT CATEGORY	BEFORE PROGRAM DATE	BEFORE PROGRAM DATE
N/A	NEW DEVELOPMENT ON VACANT LOT	TOTAL LOT COVERAGE	FULL ESTABLISHMENT
N/A	NEW SUBDIVISION OR NEW LOT	FULL ESTABLISHMENT	
N/A	NEW LOT WITH EXISTING DWELLING UNIT	ESTABLISHMENT = TOTAL LOT COVERAGE	
N/A	CONVERSION OF LAND USE TO ANOTHER LAND USE	FULL ESTABLISHMENT	
N/A	ADDITION OR ACCESSORY STRUCTURE	ESTABLISHMENT = INCREASE IN LOT COVERAGE	
N/A	SUBSTANTIAL ALTERATION	ESTABLISHMENT = TOTAL LOT COVERAGE	

STEP 6: ADJUST FOR EXISTING FOREST COVER

FULL ESTABLISHMENT OF BUFFER REQUIRED? (YES/NO)

STEP 7: ELIGIBILITY FOR NATURAL REGENERATION

IF THE PROJECT REQUIRES BUFFER ESTABLISHMENT GREATER THAN ONE ACRE, THEN 50% OF THE AREA REQUIRED CAN BE ESTABLISHED THROUGH NATURAL REGENERATION, AS LONG AS IT IS WITHIN 50 FEET OF MATURE FOREST, AND A SUPPLEMENTAL PLANTING PLAN & FINANCIAL ASSURANCE ARE PROVIDED. IF ELIGIBLE, IDENTIFY THE NATURAL REGENERATION AREA ON THE PLAN AND REDUCE THE PLANTING REQUIREMENT BY THE NATURAL REGENERATION SQUARE FOOTAGE.

TOTAL AREA OF BUFFER REQUIRED TO BE ESTABLISHED (STEP 5 OR STEP 6)
NONE

TOTAL ESTABLISHMENT > 1 ACRE? (YES / NO)

NATURAL REGENERATION PERMITTED? (IF ESTABLISHMENT > 1 ACRE, YES. OTHERWISE, NO)

STEP 8: DETERMINE STOCKING

1. IDENTIFY AREAS OF NATURAL REGENERATION
2. USE TABLE BELOW TO EVALUATE THE AREA THAT MUST BE PLANTED USING LANDSCAPING STOCK AND AREA THAT MAY BE PLANTED USING FLEXIBLE STOCKING

SELECT	AMOUNT	OPTIONS
MITIGATION		
X	LESS THAN 1 ACRE	LANDSCAPING STOCK
	1 ACRE OR MORE	MIN. 50% LANDSCAPING STOCK, REMAINDER FLEXIBLE

MITIGATION REQUIREMENT:

STOCKING REQUIREMENT: LANDSCAPE STOCK: 100% X (ACRES) = (ACRES)
FLEXIBLE STOCK: 0% X (ACRES) = 0.0 (ACRES)

STEP 9: CLUSTER PLANTING EVALUATION

SEE STEP 10 FOR PLANTING

STEP 10: LANDSCAPE SCHEDULE: SPECIES, STOCK, SIZE, AND QUANTITY

BUFFER PLANTING AREA SCHEDULE

NATIVE FLOODPLAIN SEED MIX COMPOSITION		
% COMPOSITION	BOTANICAL NAME	COMMON NAME
20.60%	PANICUM CLANDESTINUM	DEERTONGUE
20.00%	ELYMUS RIPARIUS	RIVERBANK WILDRYE
10.00%	ANDROPOGON GERARDII	BIG BLUESTEM
10.00%	CAREX LURIDA	LURID (SHALLOW) SEDGE
10.00%	CAREX VULPINOIDEA	FOX SEDGE
8.00%	CAREX SCOPARIA	BLUNT BROOM SEDGE
8.00%	PANICUM VIRGATUM	SWITCHGRASS
4.00%	VERBENA HASTATA	BLUE VERVAIN
3.00%	JUNCUS EFFUSUS	SOFT RUSH
1.00%	ASCLEPIAS INCARNATA	SWAMP MILKWEED
1.00%	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER
1.00%	DESMODIUM PANICULATUM	PANICLEDLEAF TICKTREFOIL
1.00%	EUPATORIUM FISTULOSUM	JOE PYE WEED
0.70%	EUPATORIUM PERFOLIATUM	BONESET
0.50%	HELENIUM AUTUMNALE	COMMON SNEEZEWEED
0.50%	MONARDA FISTULOSA	WILD BERGAMOT
0.50%	VERNONIA NOVEBORACENSIS	NEW YORK IRONWEED
0.20%	MIMULUS RINGENS	SQUARE-STEMMED MONKEYFLOWER

NATIVE UPLAND SEED MIX COMPOSITION		
% COMPOSTION	BOTANICAL NAME	COMMON NAME
38.00%	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM
15.00%	ELYMUS RIPARIUS	RIVERBANK WILDRYE
15.00%	FESTUCA RUBRA	CREEPING RED FESCUE
10.00%	PANICUM CLANDESTINUM	DEERTONGUE
5.00%	ECHINACEA PURPUREA	PURPLE CONEFLOWER
4.00%	CHAMAECRISTA FASCICULATA	PARTRIDGE PEA
3.00%	RUDBECKIA HIRTA	BLACKEYED SUSAN
2.00%	ELYMUS HYSTRIX	BOTTLEBRUSH GRASS
2.00%	LIATRIS SPICATA	BLAZING STAR
1.50%	LESPEDEZA VIRGINICA	SLENDER LESPEDEZA
1.30%	ASTER PRENANTHOIDES	ZIGZAG ASTER
1.00%	ANEMONE VIRGINIANA	THIMBLEWEED
0.50%	AQUILEGIA CANADENSIS	EASTERN COLUMBINE
0.50%	BAPTISIA AUSTRALIS	BLUE FALSE INDIGO
0.50%	JUNCUS TENUIS	PATH RUSH
0.50%	RUDBECKIA FULGIDA VAR. FULGIDA	ORANGE CONEFLOWER
0.20%	BAPTISIA TINCTORIA	YELLOW FALSE INDIGO

COVER/NURSE CROP SEEDING TABLE			
SEEDING RATE	BOTANICAL NAME	COMMON NAME	SEEDING DATE
30 LB/AC	SECALE CEREAL	CEREAL RYE	11/1-2/28
30 LB/AC	AVENA SATIVA	GRAIN OATS	3/1-4/30
10 LB/AC	SETARIA ITALICA	FOXTAIL MILLET	5/1-8/31
10 LB/AC	LOLIUM MULTFLORUM	ANNUAL RYEGRASS	9/1-10/31

MITIGATION SUMMARY

CATEGORY	AREA, SF
TOTAL MITIGATION REQUIRED	54,267
MITIGATION PROVIDED	
ZONE D	9,133
ZONE E	21,252
ZONE F	14,475
ZONE G	3,590
ZONE H	5,870
TOTAL MITIGATION PROVIDED	54,320

ZONE D: CHANNEL FRINGE PLANTING SCHEDULE - 4,675 SF					
BOTANICAL NAME/ TECHNICAL DESCRIPTION	COMMON NAME	INDICATOR STATUS	SPACING	QUANTITY	CREDIT TOTAL, SF
SMALL SHRUBS -18" CONTAINERIZED			SF CREDIT PER UNIT =		25
VIBURNUM NUDUM	POSSUMHAW	OBL	RANDOM - 5' OC	50	1250
TUBELINGS			SF CREDIT BASED ON AREA COVERED		
CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	OBL	RANDOM - 4' OC	50	800
QUERCUS BICOLOR	SWAMP WHITE OAK	FACW	RANDOM - 4' OC	50	800
VIBURNUM DENTATUM	ARROWWOOD	FAC	RANDOM - 4' OC	50	800
LIVE STAKES			SF CREDIT BASED ON AREA COVERED		
CORNUS AMOMUM	SILKY DOGWOOD	FACW	12" OC	404	404
SALIX NIGRA	BLACK WILLOW	OBL	12" OC	404	404
SEEDING			SF CREDIT BASED ON AREA COVERED		
NATIVE SEED MIX (ERNMX 154 OR EQUIVALENT)	NATIVE FLOODPLAIN SEED MIX	N/A	N/A	2.5 LB	4,675
COVER/NURSE CROP, SEE TABLE FOR RATE & DATES		N/A	N/A	SEED	N/A
			TOTAL:	1008	9,133

ZONE G: SUPPLEMENTAL RIPARIAN FOREST PLANTING SCHEDULE - 6,813 SF					
BOTANICAL NAME/ TECHNICAL DESCRIPTION	COMMON NAME	INDICATOR STATUS	SPACING	QUANTITY	CREDIT TOTAL, SF
CANOPY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		100
NYSSA SYLVATICA	BLACK GUM	FAC	NATURALIZED AT 10' OC	4	400
QUERCUS BICOLOR	SWAMP WHITE OAK	FACW	NATURALIZED AT 10' OC	4	400
QUERCUS PHELLOS	WILLOW OAK	FACW	NATURALIZED AT 10' OC	5	500
			CANOPY TREE CREDIT		36.2%
UNDERSTORY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		75
ASIMINA TRILOBA	PAW PAW	FAC	NATURALIZED AT 8.5' OC	5	375
CARPINUS CAROLIANA	IRONWOOD	FAC	NATURALIZED AT 8.5' OC	5	375
MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	FACW	NATURALIZED AT 8.5' OC	5	375
			UNDERSTORY TREE CREDIT		31.3%
LARGE SHRUBS - 36" CONTAINERIZED					50
ILEX VERTICILATTA	WINTERBERRY	FACW	NATURALIZED AT 7' OC	5	250
VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	FACW	NATURALIZED AT 7' OC	5	250
VIBURNUM DENTATUM	SOUTHERN ARROWWOOD	FAC	NATURALIZED AT 7' OC	5	250
			LARGE SHRUB TREE CREDIT		20.9%
SMALL SHRUBS -18" CONTAINERIZED			SF CREDIT PER UNIT =		25
CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	OBL	NATURALIZED AT 5' OC	5	125
PHOTONIA MELANOCARPA	BLACK CHOKEBERRY	FAC	NATURALIZED AT 5' OC	5	125
ROSA PALUSTRIS	SWAMP ROSE	OBL	NATURALIZED AT 5' OC	5	125
			SMALL SHRUB TREE CREDIT		10.4%
HERBACEOUS					
QUARTS			SF CREDIT PER UNIT =		2
ONOCLEA SENSIBILIS	SENSITIVE FERN	FACW	1' O.C.	10	20
OSMUNDIA CINNAMOMEA	CINNAMON FERN	FACW	1' O.C.	10	20
			HERBACEOUS CREDIT		1.1%
			68		3,590

ZONE H: SUPPLEMENTAL UPLAND FOREST PLANTING SCHEDULE - 11,455 SF					
BOTANICAL NAME/ TECHNICAL DESCRIPTION	COMMON NAME	INDICATOR STATUS	SPACING	QUANTITY	CREDIT TOTAL, SF
CANOPY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		100
QUERCUS ALBA	WHITE OAK	FACU	NATURALIZED AT 10' OC	6	600
QUERCUS FALCATA	SOUTHERN RED OAK	FACU	NATURALIZED AT 10' OC	6	600
QUERCUS RUBRA	NORTHERN RED OAK	FACU	NATURALIZED AT 10' OC	6	600
FAGUS GRANDIFOLIA	AMERICAN BEECH	FACU	NATURALIZED AT 10' OC	6	600
NYSSA SYLVATICA	BLACK GUM	FAC	NATURALIZED AT 10' OC	6	600
			CANOPY TREE CREDIT		51.1%
UNDERSTORY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		75
CERCIS CANADENSIS	EASTERN REDBUD	UPL	NATURALIZED AT 8.5' OC	6	450
CHIONANTHUS VIRGINICUS	WHITE FRINGETREE	UPL	NATURALIZED AT 8.5' OC	6	450
CORNUS FLORIDA	FLOWERING DOGWOOD	FACU	NATURALIZED AT 8.5' OC	6	450
			UNDERSTORY TREE CREDIT		23.0%
LARGE SHRUBS - 36" CONTAINERIZED					50
HAMAMELIS VIRGINIANA	WITCH HAZEL	FACW	NATURALIZED AT 7' OC	6	300
ILEX GLABRA	INKBERRY	FACU	NATURALIZED AT 7' OC	6	300
KALMIA LATIFOLIA	MOUNTAIN LAUREL	FACU	NATURALIZED AT 7' OC	6	300
MORELLA PENNSYLVANICA	NORTHERN BAYBERRY	FAC	NATURALIZED AT 7' OC	6	300
			LARGE SHRUB TREE CREDIT		20.4%
SMALL SHRUBS -18" CONTAINERIZED			SF CREDIT PER UNIT =		25
VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	FACU	NATURALIZED AT 5' OC	6	150
VIBURNUM ACERIFOLIUM	MAPLE-LEAF VIBURNUM	FACU	NATURALIZED AT 5' OC	6	300
			SMALL SHRUB TREE CREDIT		5.1%
HERBACEOUS					
QUARTS			SF CREDIT PER UNIT =		2
POLYSTICHUM ACROSTICHOIDES	CHRISTMAS FERN	FACU	1' O.C.	10	20
			HERBACEOUS CREDIT		0.3%
				82	5,870

ZONE E: RIPARIAN FOREST PLANTING SCHEDULE - 18,867 SF					
SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	SPACING	QUANTITY	CREDIT TOTAL, SF
CANOPY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		100
ACER RUBRUM	RED MAPLE	FAC	NATURALIZED AT 10' OC	10	1000
BETULA NIGRA	RIVER BIRCH	FACW	NATURALIZED AT 10' OC	12	1200
NYSSA SYLVATICA	BLACK GUM	FAC	NATURALIZED AT 10' OC	12	1200
PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	FACW	NATURALIZED AT 10' OC	14	1400
QUERCUS BICOLOR	SWAMP WHITE OAK	FACW	NATURALIZED AT 10' OC	12	1200
QUERCUS PALUSTRIS	PIN OAK	FACW	NATURALIZED AT 10' OC	14	1400
QUERCUS PHELLOS	WILLOW OAK	FACW	NATURALIZED AT 10' OC	14	1400
TAXODIUM DISTUCHUM	BALD CYPRESS	OBL	NATURALIZED AT 10' OC	12	1200
ULMUS AMERICANA	AMERICAN ELM	FAC	NATURALIZED AT 10' OC	12	1200
					53.9%
UNDERSTORY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		75
ASIMINA TRILOBA	PAW PAW	FAC	NATURALIZED AT 8.5' OC	14	1050
CARPINUS CAROLIANA	IRONWOOD	FAC	NATURALIZED AT 8.5' OC	14	1050
MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	FACW	NATURALIZED AT 8.5' OC	14	1050
AMELANCHIER CANADENSIS	SERVICEBERRY	FAC	NATURALIZED AT 8.5' OC	14	1050
					20.2%
LARGE SHRUBS - 36" CONTAINERIZED					50
CLETHRA ALNIFOLIA	COASTAL SWEETPEPPERBUSH	FACW	NATURALIZED AT 7' OC	10	500
ILEX VERTICILATTA	WINTERBERRY	FACW	NATURALIZED AT 7' OC	10	500
LINDERA BENZOIN	SPICEBUSH	FACW	NATURALIZED AT 7' OC	10	500
VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	FACW	NATURALIZED AT 7' OC	10	500
VIBURNUM DENTATUM	SOUTHERN ARROWWOOD	FAC	NATURALIZED AT 7' OC	12	600
					12.5%
SMALL SHRUBS -18" CONTAINERIZED			SF CREDIT PER UNIT =		25
CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	OBL	NATURALIZED AT 5' OC	10	250
PHOTONIA MELANOCARPA	BLACK CHOKEBERRY	FAC	NATURALIZED AT 5' OC	12	300
ROSA PALUSTRIS	SWAMP ROSE	OBL	NATURALIZED AT 5' OC	10	250
					3.8%
HERBACEOUS					
QUARTS			SF CREDIT PER UNIT =		2
ONOCLEA SENSIBILIS	SENSITIVE FERN	FACW	1' O.C.	20	40
OSMUNDIA CINNAMOMEA	CINNAMON FERN	FACW	1' O.C.	20	40
RUDBECKIA LACINATA	CUTLEAF CONEFLOWER	FACW	1' O.C.	18	36
SEEDING			SF CREDIT BASED ON AREA COVERED		
NATIVE SEED MIX ERNMX 154 OR EQUIVALENT)	NATIVE FLOODPLAIN SEED MIX	N/A	N/A	9.0 LB	1880
		N/A	N/A		0
					9.6%
			288		20,796

ZONE F: UPLAND FOREST PLANTING SCHEDULE - 13,113 SF					
SCIENTIFIC NAME	COMMON NAME	INDICATOR STATUS	SPACING	QUANTITY	CREDIT TOTAL, SF
CANOPY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		100
QUERCUS ALBA	WHITE OAK	FACU	NATURALIZED AT 10' OC	7	700
QUERCUS FALCATA	SOUTHERN RED OAK	FACU	NATURALIZED AT 10' OC	8	800
QUERCUS RUBRA	NORTHERN RED OAK	FACU	NATURALIZED AT 10' OC	9	900
CARYA TOMENTOSA	MOCKERNUT HICKORY	UPL	NATURALIZED AT 10' OC	5	500
FAGUS GRANDIFOLIA	AMERICAN BEECH	FACU	NATURALIZED AT 10' OC	6	600
PRUNUS SEROTINA	BLACK CHERRY	FACU	NATURALIZED AT 10' OC	5	500
LIRIODENDRON TULIPIFERA	TULIP POPLAR	FACU	NATURALIZED AT 10' OC	5	500
NYSSA SYLVATICA	BLACK GUM	FAC	NATURALIZED AT 10' OC	8	800
PINUS STROBUS	EASTERN WHITE PINE	FACU	NATURALIZED AT 10' OC	8	800
					42.1%
UNDERSTORY TREES - 3/4" CALIPER			SF CREDIT PER UNIT =		75
CERCIS CANADENSIS	EASTERN REDBUD	UPL	NATURALIZED AT 8.5' OC	10	750
CHIONANTHUS VIRGINICUS	WHITE FRINGETREE	UPL	NATURALIZED AT 8.5' OC	10	750
CORNUS FLORIDA	FLOWERING DOGWOOD	FACU	NATURALIZED AT 8.5' OC	10	750
JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	FACU	NATURALIZED AT 8.5' OC	5	375
ILEX OPACA	AMERICAN HOLLY	FAC	NATURALIZED AT 8.5' OC	10	750
OSTRYA VIRGINIANA	EASTERN HOPHORNBEAM	FACU	NATURALIZED AT 8.5' OC	10	750
					28.5%
LARGE SHRUBS - 36" CONTAINERIZED					50
HAMAMELIS VIRGINIANA	WITCH HAZEL	FACW	NATURALIZED AT 7' OC	12	600
ILEX GLABRA	INKBERRY	FACU	NATURALIZED AT 7' OC	12	600
KALMIA LATIFOLIA	MOUNTAIN LAUREL	FACU	NATURALIZED AT 7' OC	12	600
MORELLA PENNSYLVANICA	NORTHERN BAYBERRY	FAC	NATURALIZED AT 7' OC	12	600
					16.6%
SMALL SHRUBS -18" CONTAINERIZED			SF CREDIT PER UNIT =		25
VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	FACU	NATURALIZED AT 5' OC	10	250
VIBURNUM ACERIFOLIUM	MAPLE-LEAF VIBURNUM	FACU	NATURALIZED AT 5' OC	10	500
					3.5%
HERBACEOUS					
QUARTS			SF CREDIT PER UNIT =		2
POLYSTICHUM ACROSTICHOIDES	CHRISTMAS FERN	FACU	1' O.C.	20	40
SEEDING			SF CREDIT BASED ON AREA COVERED		
NATIVE SEED MIX (ERNMX 140 OR EQUIVALENT)	NATIVE UPLAND SEED MIX	N/A	N/A	4 LB	1310
COVER/NURSE CROP, SEE TABLE FOR RATE & DATES			N/A	N/A	0
					9.3%
			182		14,475

60% DESIGN

EG-SWMENG-_____-_____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STILLMEADOW DRIVE LANDSCAPE & BUFFER MANAGEMENT PLAN

DRAWN BY: JT
DESIGNED BY: JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 29 OF 43
DATE : 06/05/18

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_PLNT04.dwg

SPSC CONSTRUCTION SPECIFICATIONS

MATERIALS

THE CONTRACTOR WILL NOT BE GRANTED AN EXTENSION OF EXTRA TIME OR EXTRA COMPENSATION DUE TO DELAY CAUSED BY SAMPLING, TESTING, APPROVAL OR DISAPPROVAL OF THE MATERIALS UNDER THE REQUIREMENTS OF THESE SPECIFICATIONS. THE MATERIAL SHALL BE AS SPECIFIED ON THE SPSC ROCK SIZE TABLE AND HEREIN. IF SUFFICIENT MATERIAL IS NOT AVAILABLE FROM THE SITE, THE CONTRACTOR SHALL OBTAIN MATERIAL FROM A QUARRY AND PROVIDE CERTIFICATION OF GRADATION ANALYSIS OR SAMPLE OF STONE TO THE COUNTY FOR APPROVAL PRIOR TO INSTALLATION. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL NECESSARY ARRANGEMENTS WITH THE SOURCE OF SUPPLY IN A TIMELY FASHION, SO THAT THE CONTRACTOR SHALL MAINTAIN AN ADEQUATE SUPPLY OF ALL MATERIALS AND THAT WORK SHALL NOT BE UNNECESSARILY DELAYED DUE TO INSUFFICIENT SUPPLY.

- CASCADE, FOOTER, AND WEIR BOULDERS – BOULDERS SHALL BE AS SPECIFIED ON THE SPSC ROCK SIZE TABLE. BOULDERS SHALL BE SANDSTONE, STACKABLE, OBLONG, AND FLAT IN APPEARANCE, AND DARK BROWN OR DARK GRAY IN COLOR. IN GENERAL, FOOTER ROCKS SHALL BE SELECTED TO BE THE LARGEST ROCKS AVAILABLE. FOOTER ROCKS SHALL BE PLACED AT THE BOTTOM AND DOWNSTREAM SIDE OF THE TRENCH. FOOTER BOULDERS SHALL EXTEND 2 FEET BELOW THE LOWEST POINT IN THE EXCAVATED POOL. GRANITE BOULDERS MAY BE SUBSTITUTED FOR SANDSTONE BOULDERS IF THE CONTRACTOR SHOWS THE COUNTY DUE DILIGENCE IN ATTEMPTING TO LOCATE SANDSTONE BOULDERS. ANY SUBSTITUTION WILL BE AT NO COST TO THE COUNTY.

- COBBLE – THE STONE SHALL BE SUBANGULAR SILICA COBBLE AND THE STONE SIZE SHALL BE AS SPECIFIED ON THE SPSC ROCK SIZE TABLE. COBBLE SHALL BE COMPOSED OF A WELL-GRADED MIXTURE OF STONE SIZE SO THAT 50% OF THE PIECES, BY WEIGHT, SHALL BE LARGER THAN THE D50 SIZE DETERMINED BY USING CHARTS PREPARED BY THE US DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE. A WELL GRADED MIXTURE AS USED HEREIN IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF LARGER STONE SIZES BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE LARGE VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE SHALL NOT EXCEED 1.5 TIMES THE SPECIFIED D50 SIZE.

- SAND/WOOD CHIP FILTER MEDIA – SAND SHALL BE AS SPECIFIED ON THE SPSC ROCK SIZE TABLE. SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO 'ROCK DUST' CAN BE USED FOR SAND.

  WOOD CHIPS SHALL BE EITHER HARDWOOD OR SOFTWOOD PRODUCED BY A CHIPPING MACHINE TO A MAXIMUM SIZE OF 2X2X0.5 INCHES. WOOD CHIPS SHALL BE FREE FROM LEAVES, TWIGS, WOOD SHAVINGS, FINES, SAWDUST, TOXIC SUBSTANCES, AND ALL FOREIGN MATERIAL. THE WOODCHIPS ARE ADDED TO THE SAND MIX (PRIOR TO PLACEMENT), APPROXIMATELY 20% BY VOLUME, TO INCREASE THE ORGANIC CONTENT AND PROMOTE PLANT GROWTH AND SUSTAINABILITY.

  THE SAND/WOODCHIP MIX FILTER BED SHALL HAVE A MINIMUM DEPTH OF EIGHTEEN (18) INCHES UNDER THE RIFFLE CHANNEL/POOL BOTTOM AND A MINIMUM WIDTH OF FOUR (4) FEET AND SHALL BE PLACED AS THE SUBSTRATE DRAINAGE MATERIAL ALONG THE ENTIRE PROJECT LENGTH.

- WOODY DEBRIS – LARGE WOODY DEBRIS OR INVERTED ROOTWADS SHALL BE CUT FROM HARDWOOD OR PINE TREES WITH A TRUNK DIAMETER AT BREAST HEIGHT (DBH) OF 6 INCHES TO 24 INCHES. ROOT FANS SHALL BE OBLONG TO CIRCULAR SHAPE AND HAVE A MINIMUM SPREAD OF 2 FEET AS MEASURED AT ITS NARROWEST AXIS AND COVERING AN AREA A MINIMUM OF 16 SQUARE FEET. THE ATTACHED TRUNK SHALL BE A MINIMUM OF 6 FEET IN LENGTH. THEIR SIZE SHALL NOT EXCEED 10 PERCENT OF THE POOL VOLUME.

  LARGE WOODY DEBRIS CAN BE SALVAGED FROM THE PROJECT SITE PROVIDED THEY MEET THE ABOVE REQUIREMENTS AND ARE CLEARLY FLAGGED FOR CLEARING AND GRUBBING. NO LIVE TREES SHALL BE HARVESTED FOR THE SOLE PURPOSE OF PROVIDING MATERIALS FOR THIS ITEM. IF SUFFICIENT MATERIALS MEETING THE ABOVE REQUIREMENTS ARE NOT AVAILABLE FROM THE PROJECT SITE, THE CONTRACTOR SHALL THEN OBTAIN OFF-SITE MATERIAL MEETING THE SPECIFIED REQUIREMENTS.

- COMPOST – COMPOST SHALL HAVE A PH BETWEEN 5.0 AND 7.0. IT SHALL BE STABLE AND NOT REHEAT UPON RESTACKING. COMPOST SHALL HAVE A MOISTURE CONTENT BETWEEN 30 AND 55 PERCENT, AND A PARTICLE SIZE OF 0.5 INCHES OR LESS. COMPOST SHALL BE SOURCE-SEPARATED COMPOST (TYPE B), APPROVED BY THE MARYLAND DEPARTMENT OF AGRICULTURE (MDA). COMPOST SHALL BE PRODUCED BY AN MDA CERTIFIED COMPOST OPERATOR AND HAVE A SOLUBLE SALT CONCENTRATION NOT TO EXCEED 5 DS (MMHOS/CM). THE SOURCE-SEPARATED COMPOST SHALL BE ONE OF THE FOLLOWING TYPES:
  A. TREE LEAF COMPOST
  B. NON-TREE LEAF COMPOST. WHEN COMPOST IS FROM LAWN CLIPPINGS, IT SHALL BE TESTED IN CONFORMANCE WITH COMAR 15.18.04.05.

- FILTER CLOTH – FILTER CLOTH SHALL MEET OR EXCEED THE REQUIREMENTS OF ACF NO80 POLYPROPYLENE NONWOVEN GEOTEXTILE FABRIC. THE CONTRACTOR SHALL PROVIDE MATERIAL SPECIFICATION TO THE COUNTY FOR APPROVAL. FILTER FABRIC SHALL BE PLACED UNDER ALL BOULDERS. REFER TO CONSTRUCTION DRAWINGS FOR PLACEMENT LOCATION. TO PREVENT UNDERCUTTING, A CONTINUOUS SHEET OF FILTER FABRIC SHALL BE USED ALONG THE CROSS-SECTION. FILTER FABRIC SHALL NOT BE PLACED IN THE POOLS SO AS NOT TO IMPEDE FILTRATION.

- CLASS I RIPRAP – RIPRAP SHALL MEET CLASS I RIPRAP REQUIREMENTS, PER HARFORD COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 901.02 AND AS DESCRIBED ON THE CONSTRUCTION DRAWINGS.

- BACKFILL – BACKFILL SHALL MEET HARFORD COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 916.01 AND AS DESCRIBED ON THE CONSTRUCTION DRAWINGS.

SUBMITTALS

- CASCADE, FOOTER, AND WEIR BOULDERS – THE CONTRACTOR WILL LOCATE POTENTIAL SOURCES FOR THE STONE. THE CONTRACTOR AND THE COUNTY OR ITS AGENT WILL JOINTLY VISIT THE SOURCE SITES TO DETERMINE WHETHER THE STONE MEETS THE SPECIFIED REQUIREMENTS AND WHETHER THERE ARE SUFFICIENT QUANTITIES OF THE STONE TO MEET THE PROJECT REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT TO THE COUNTY A CERTIFICATE VERIFYING THE FOLLOWING BOULDER INFORMATION:

  (1) STONE CLASSIFICATION
  (2) STONE DENSITY (I.E., WEIGHT PER CUBIC FOOT)
  (3) WEIGHT OF STONE BEING SUPPLIED.
  (4) STONE QUALITY SHALL MEET ALL OF THE ABOVE SPECIFICATIONS.

- COBBLE – THE CONTRACTOR SHALL OBTAIN COBBLE SAMPLES FROM THE QUARRY AND SUBMIT TO THE COUNTY THE SAMPLES AND A CERTIFICATE VERIFYING THE FOLLOWING BOULDER INFORMATION:

  (1) STONE CLASSIFICATION
  (2) STONE DENSITY (I.E., WEIGHT PER CUBIC FOOT)
  (3) WEIGHT OF STONE BEING SUPPLIED.
  (4) STONE QUALITY SHALL MEET ALL OF THE ABOVE SPECIFICATIONS.

- SAND/WOOD CHIP MIX – THE CONTRACTOR SHALL PROVIDE THE SOURCE AND MATERIAL SPECIFICATIONS TO THE COUNTY FOR APPROVAL.

- COMPOST – THE CONTRACTOR SHALL OBTAIN A COMPOST SAMPLE AND SUBMIT TO THE COUNTY FOR APPROVAL THE SAMPLE AND CERTIFICATE WITH THE SOURCE AND SPECIFICATIONS OF THE COMPOST.

- GEOTEXTILE – THE CONTRACTOR SHALL PROVIDE MATERIAL SPECIFICATION TO THE COUNTY FOR APPROVAL.

- CLASS I RIPRAP – THE CONTRACTOR SHALL OBTAIN CERTIFICATION FROM THE QUARRY FOR THE ROCK AND SUBMIT TO THE COUNTY FOR APPROVAL. THE CERTIFICATION SHALL INCLUDE:

  (1) STONE SIZE
  (2) STONE DENSITY (I.E., WEIGHT PER CUBIC FOOT)
  (3) THAT SIZES STIPULATED IN THE SPECIFICATIONS ARE BEING SUPPLIED TO THE SITE, WITH SOURCE(S) OF STONE INDICATED
  (4) THAT STONE QUALITY WILL MEET ALL PROJECT SPECIFICATIONS.

CONSTRUCTION

THE SPSC SYSTEM SHALL BE INSTALLED ACCORDING TO THE SEQUENCE OF CONSTRUCTION, THE CONSTRUCTION DRAWINGS, THESE SPECIFICATIONS, AND AS DIRECTED BY THE COUNTY.

CONSTRUCTION OF THE SPSC SYSTEM SHALL BEGIN AT THE DOWNSTREAM END AND PROCEED UPSTREAM TO THE OUTFALL.

THE SAND/WOOD CHIP MIX SHALL BE USED FOR FILLING THE FACILITY BOTTOM TO ACHIEVE THE GRADE NECESSARY FOR THE INSTALLATION OF THE WEIRS. THE SAND/WOODCHIP MIX FILTER BED SHALL HAVE A MINIMUM DEPTH OF 18 INCHES UNDER THE RIFFLE CHANNEL AND A MINIMUM WIDTH OF 4 FEET AND SHALL BE PLACED AS THE SUBSTRATE DRAINAGE MATERIAL ALONG THE ENTIRE PROJECT LENGTH.

FOOTER BOULDERS SHALL BE PLACED AT THE INTERFACE OF THE POOLS AND RIFFLES AS SHOWN ON THE CONSTRUCTION DRAWINGS. A CONTINUOUS SHEET OF GEOTEXTILE SHALL BE USED TO SEPARATE THE SAND/WOOD CHIP MIX AND THE BOULDERS THAT LINE THE FACILITY BOTTOM. ADDITIONAL BOULDERS SHALL BE PLACED ON TOP OF THE FOOTER BOULDERS AT THE WEIR ELEVATION UPSTREAM OF THE FOOTER BOULDERS TO FORM THE WEIR CHANNEL PARABOLIC SHAPE. BOULDERS SHALL BE ARRANGED HORIZONTALLY IN THE CENTER OF THE CHANNEL AND THE ARMS ON EITHER SIDE OF THE CHANNEL SHALL BE EXTENDED PARABOLICALLY/APPROXIMATELY 20 DEGREE ANGLE LONGITUDINALLY TO THE CENTER OF THE POOL. THE BOULDERS SHALL BE ARRANGED TO MAXIMIZE INTERLOCKING. THE FACE OF THE BOULDERS SHALL BE TILTED DOWNSTREAM TO OCCUPY HALF OF THE INCLINE (6"VERTICAL) MADE UP OVER THE ENTIRE LENGTH OF THE WEIR.

ONCE THE BOULDERS HAVE BEEN PLACED, FILL WITH 75% COBBLE AND 25% BOULDERS TO FORM THE BACKSIDE OF THE WEIR. A SMALL COBBLE APRON SHALL BE PLACED WHERE THE BOULDERS MEET THE POOL ON THE DOWNSTREAM SIDE. ONCE THE WEIR-POOL COMBINATION IS COMPLETE, THE ENTIRE SURFACE SHALL BE STABILIZED WITH WOOD CHIPS AND TEMPORARY SEEDING. ANY DISTURBED AREA SHALL BE STABILIZED AT THE END OF EACH WORKING DAY WITH WOOD CHIPS AND TEMPORARY SEEDING.

DISCONNECT THE DIVERSION PIPE ABOVE THE COMPLETED WEIR IN THE UPSTREAM POOL AND EXCAVATE UPSTREAM POOL FROM SAND BED USING EXCAVATED MATERIAL TO BLEND EDGES OF DOWNSTREAM WEIR AND SURROUNDING GRADE. CONTINUE THE PROCESS OF ALTERNATING POOLS AND RIFFLES/WEIRS UP THROUGH THE SYSTEM TO THE CASCADE.

THE CASCADE SHALL BE CONSTRUCTED WITH A SERIES OF RIBS IN AN ARC FORMATION PERPENDICULAR TO THE FACILITY. THE CENTER AND UPSTREAM APEX OF EACH RIB SHALL BE SET IN THE PROPOSED SPILLWAY CENTERLINE. RIBS ARE ARRANGED IN A SERIES WITH LOCATIONS INDICATED IN THE CONSTRUCTION DRAWINGS.

FOOTER ROCKS FOR EACH INDIVIDUAL RIB SHALL BE INSTALLED BY EXCAVATING A TRENCH TO ACCOMMODATE BOTH THE FOOTER ROCKS AND A 2-FOOT AREA UPSTREAM. GEOTEXTILE FABRIC SHALL BE PLACED ON THE UPSTREAM SIDE OF THE TRENCH OF EACH RIB, SO THE FOOTER ROCK OVERLAPS THE MATERIAL A MINIMUM OF 1.0 FOOT. THE GEOTEXTILE FABRIC SHALL SPAN THE WIDTH OF THE RIB. THE FOOTER ROCKS SHALL BE PLACED AT THE BOTTOM OF THE TRENCH AND SHALL ABUT ONE ANOTHER. FOOTER ROCKS SHALL BE FIRMLY EMBEDDED INTO THE TRENCH BOTTOM. THE TOP ELEVATION OF THE FOOTER ROCK PLACED AT THE CENTERLINE OF THE SPILLWAY SHALL BE BELOW THE PROPOSED FINISHED GRADE.

THE TRENCH BEHIND THE FOOTER ROCKS SHALL BE BACKFILLED BEFORE THE TOP ROCKS ARE SET, WITH THE GEOTEXTILE FABRIC BETWEEN THE FOOTER ROCK AND STREAM BED MATERIAL, TAKING CARE TO FILL ALL VOIDS BETWEEN THE FOOTER ROCKS WITH THE BED MATERIAL.

TOP ROCKS SHALL BE PLACED DIRECTLY ON TOP OF THE FOOTER ROCKS AND FIT TIGHTLY AGAINST EACH OTHER. CARE SHOULD BE TAKEN WHEN PLACING TOP ROCKS THAT THE SEAMS BETWEEN TOP ROCKS DO NOT LINE UP WITH THE SEAMS BETWEEN THE FOOTER ROCKS. THE TOP ELEVATION OF THE TOP ROCK PLACED AT THE CENTERLINE OF THE STREAM SHALL BE FLUSH WITH THE PROPOSED STREAM GRADE IMMEDIATELY UPSTREAM AND DOWNSTREAM OF THE CASCADE RIB. STARTING AT THE CENTERLINE, ADJACENT ROCKS SHALL TAPER TO THE OUTSIDE LIMIT OF THE RIB WHERE ½ THE DIAMETER OF THE END ROCK SHALL BE KEYED INTO THE BANK.

THE TRENCH BEHIND THE TOP ROCKS SHALL BE BACK-FILLED WITH CASCADE BED MATERIAL, WITH THE GEOTEXTILE FABRIC BETWEEN THE TOP ROCK AND CASCADE BED MATERIAL. THE GEOTEXTILE FABRIC SHALL BE KEYED IN A MINIMUM OF 1 FOOT BELOW THE TOP ROCK OR CUT A MINIMUM OF SIX INCHES BELOW THE TOP ROCK, BEFORE INSTALLING THE STREAM BED MATERIAL TO THE PROPOSED GRADE. THE CONTRACTOR SHALL TAKE CARE TO FILL ALL VOIDS UNDERNEATH AND BETWEEN THE TOP ROCKS. CASCADE BED MATERIAL SHALL BE PLACED A MINIMUM OF 2 FEET UPSTREAM OF THE FIRST RIB OF EACH CASCADE STRUCTURE AS SPECIFIED IN THE CONSTRUCTION DRAWINGS.

EACH SUCCESSIVE CASCADE RIB SHALL BE INSTALLED FOLLOWING THE STEPS ABOVE. THE TOP ELEVATION OF ROCKS ALONG RIBS SHALL VARY UP TO 1 FOOT TO CREATE VARIED FLOW PATTERNS. THE EXISTING GULLY SHALL BE BACKFILLED PER THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS WITH THE CASCADE INSTALLATION. ONCE THE CASCADE IS COMPLETE AND GULLY HAS BEEN BACKFILLED, THE CONTRACTOR SHALL INSTALL THE RIPRAP OUTFALL PROTECTION FROM THE OUTFALL AND TIE-INTO THE TOP CASCADE RIB.

PLACE LARGE WOODY DEBRIS/INVERTED ROOT WADS IN POOLS AS SHOWN ON THE CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL PUSH THE TRUNK (STEM SIDE DOWN) INTO SOIL OR EXCAVATE THE TRENCH FOR THE INVERTED ROOT WAD AND PLACE IN THE TRENCH SO THE INVERTED ROOT WAD SITS WITH THE ROOT MASS UPWARD IN THE SHALLOW AQUATIC POOLS AND BACKFILL TO SECURE. ROOT WADS SHALL BE EMBEDDED 5 FEET BELOW THE INVERT OF THE POOL IN A VERTICAL ALIGNMENT.

COMPOST SHALL BE BLOWN OVER THE ENTIRE SPSC SITE, INCLUDING ON THE TOPS OF WEIRS AND IN THE POOL FOR FINAL STABILIZATION AND PERMANENT SEEDING AS INDICATED IN THESE CONSTRUCTION DRAWINGS.

SPSC ROCK SIZE TABLE

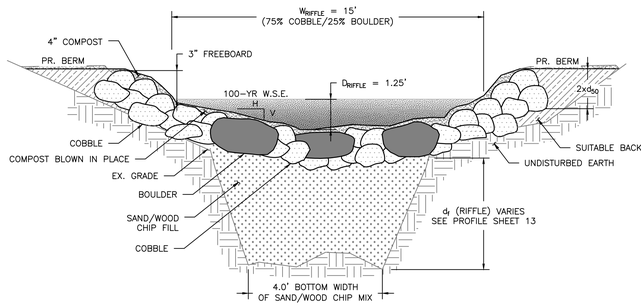
ROCK SIZE TABLE		
ROCK TYPE	ROCK SIZE	% BY WEIGHT
COBBLE	D50 = 6"	–
BOULDERS	GREATER THAN 6'X2'X2'	10
	3'X2'X2' TO 6'X2'X2'	80
	LESS THAN 3'X2'X2'	10
SAND/WOODCHIP MIX	SAND: 0.02"–0.04" (AASHTO M-6 OR ASTM C-33)	–

NOTE:
BOULDERS SHALL BE STACKABLE, OBLONG AND FLAT IN APPEARANCE

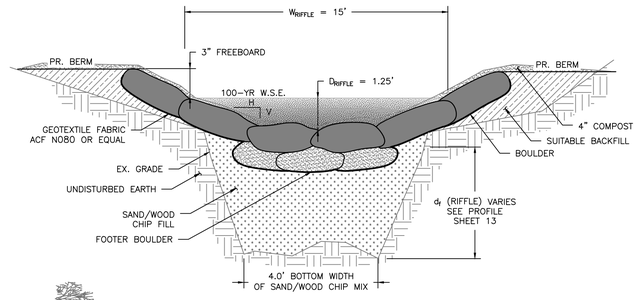
SPSC DATA TABLE

	STILLMEADOW SPSC
L_{RIFFLE}	8 FT.
L_{POOL}	VARIES SEE PROFILE SHEET 13
POOL DEPTH h_T	VARIES SEE PROFILE SHEET 13
W_{RIFFLE}	15 FT.
D_{RIFFLE}	1.25 FT.
d_{50}	6"
D_T(RIFFLE)	VARIES SEE PROFILE SHEET 13
D_T(POOL)	1.5 FT.
CASCADE HEIGHT	VARIES SEE PROFILE SHEET 13
H:V	VARIES SEE PROFILE SHEET 13

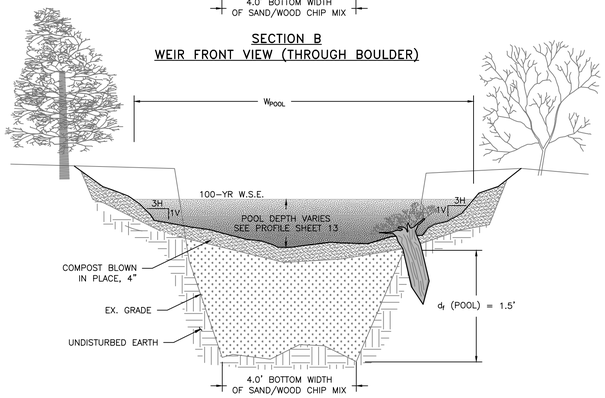
SEE SHEET 38 FOR STRUCTURE TABLE



SECTION A
WEIR BACK VIEW (THROUGH COBBLE)



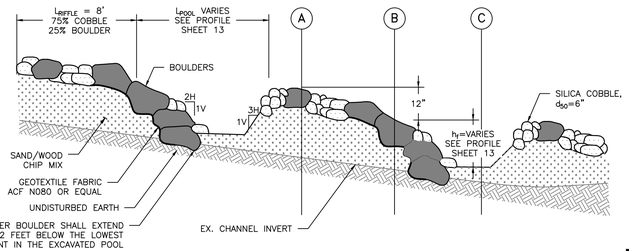
SECTION B
WEIR FRONT VIEW (THROUGH BOULDER)



SECTION C
THROUGH POOL

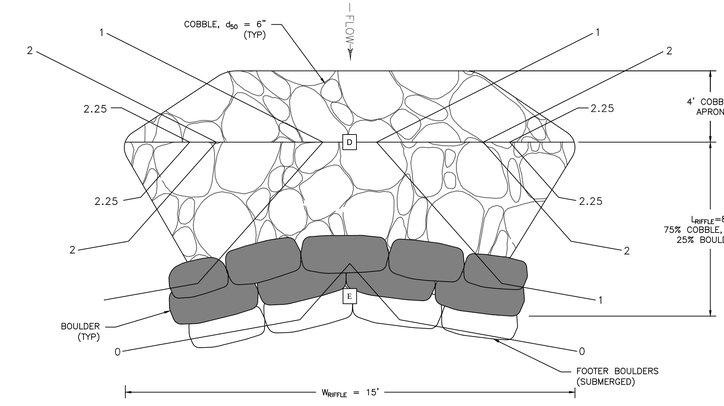
TYPICAL SPSC SECTIONS

SCALE: NOT TO SCALE



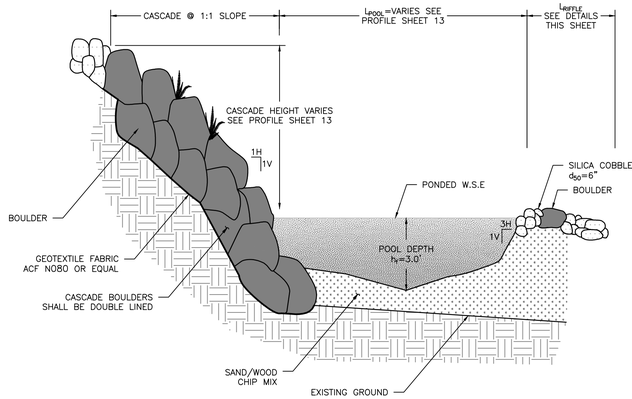
SPSC RIFFLE/POOL TYPICAL PROFILE

SCALE: NOT TO SCALE



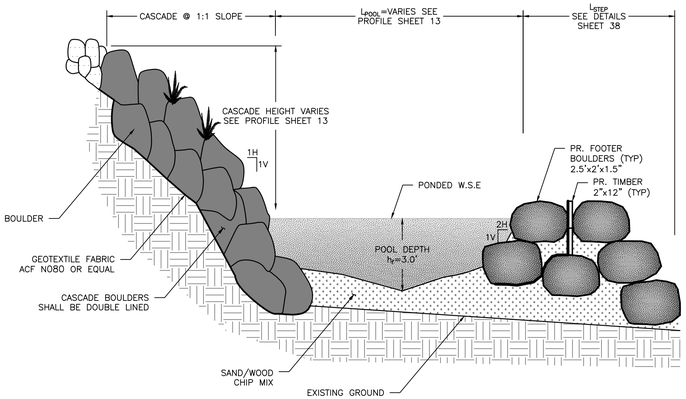
SPSC RIFFLE-WEIR TYPICAL PLAN VIEW

SCALE: NOT TO SCALE



SPSC BOULDER CASCADE/POOL TYPICAL PROFILE

SCALE: NOT TO SCALE



TYPICAL PROFILE

SPSC BOULDER CASCADE/POOL TO LOG/BOULDER STEP

SCALE: NOT TO SCALE

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
SPSC NOTES & DETAILS

DRAWN BY: BF
DESIGNED BY: BF
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 36 OF 43
DATE : 06/05/18

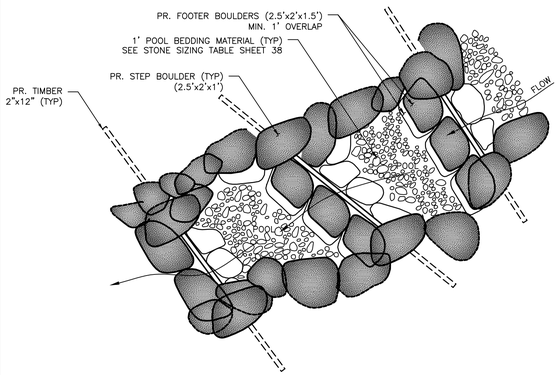
EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

Bayland Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

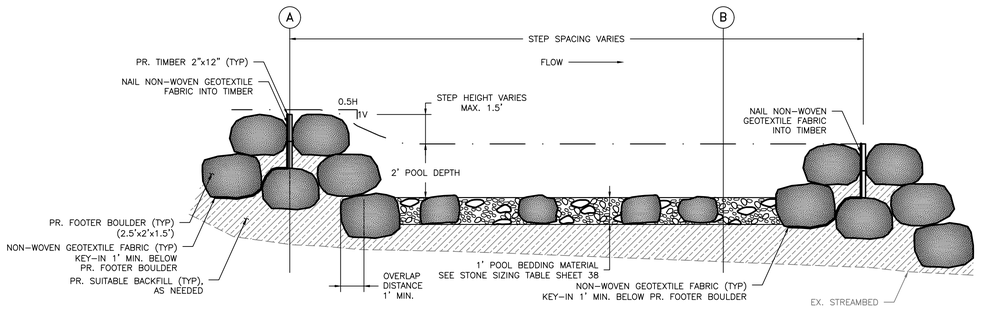
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

2:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_PROF03.dwg



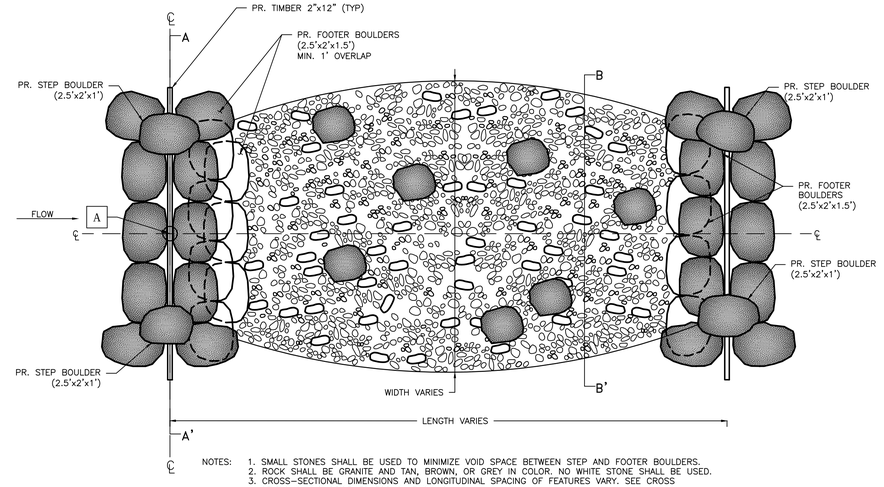
LOG STEP POOL – ISOMETRIC VIEW

SCALE: NOT TO SCALE



LOG STEP POOL – PROFILE VIEW

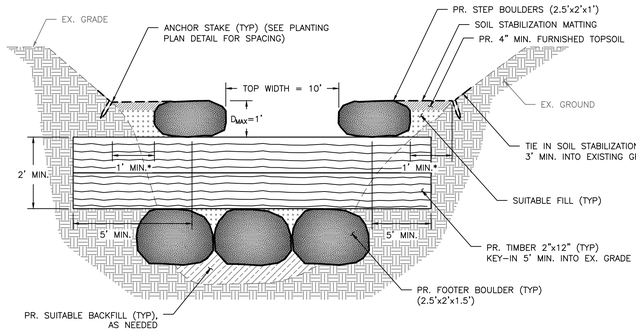
SCALE: NOT TO SCALE



NOTES:
1. SMALL STONES SHALL BE USED TO MINIMIZE VOID SPACE BETWEEN STEP AND FOOTER BOULDERS.
2. ROCK SHALL BE GRANITE AND TAN, BROWN, OR GREY IN COLOR. NO WHITE STONE SHALL BE USED.
3. CROSS-SECTIONAL DIMENSIONS AND LONGITUDINAL SPACING OF FEATURES VARY. SEE CROSS SECTIONS AND PROFILES FOR DIMENSIONS.

LOG STEP POOL – PLAN VIEW

SCALE: NOT TO SCALE

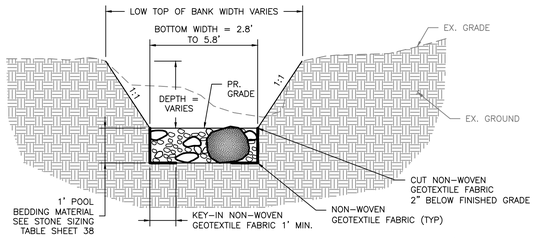


NOTES:
1. SEE CROSS SECTIONS AND GRADING PLANS FOR PROPOSED GRADES.
2. PLACE ANCHOR STAKES IN FLOODPLAIN UPSTREAM AND DOWNSTREAM OF LOG STEP.
3. IF ONE TIMBER BOARD IS NOT OF SUFFICIENT LENGTH TO KEY-INTO EX. GRADE A MINIMUM OF 5' ON BOTH BANKS, THEN TWO TIMBER BOARDS SHALL BE USED WITH A MINIMUM OF 1' OVERLAP BETWEEN BOARDS.

*WRAP SOIL STABILIZATION MATTING 1' MIN. UNDER FILL AND NAIL TO PR. TIMBER.

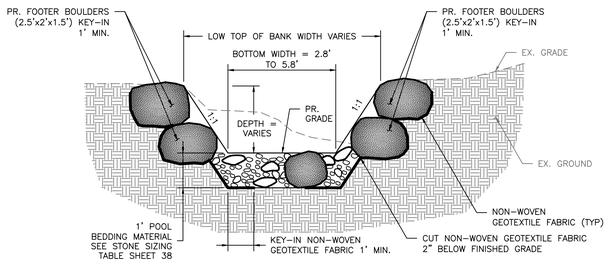
LOG STEP POOL – SECTION A-A'

SCALE: NOT TO SCALE



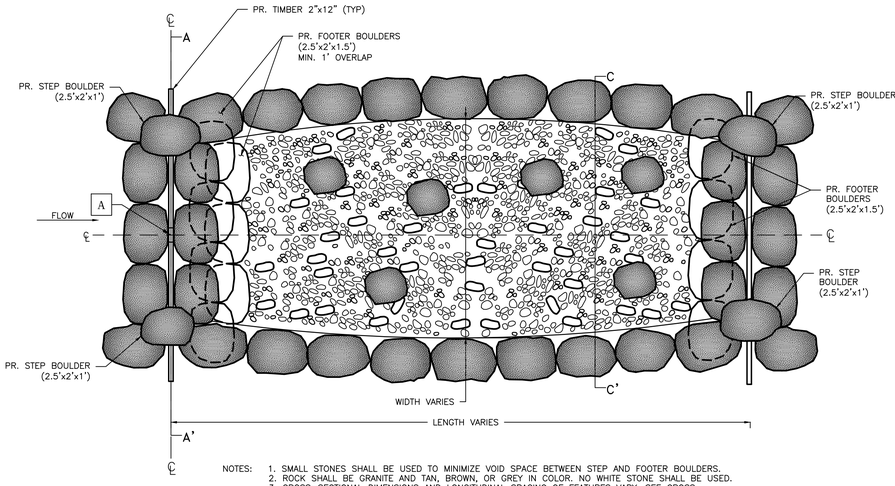
LOG STEP POOL – SECTION VIEW B-B'

SCALE: NOT TO SCALE



LOG STEP POOL – SECTION VIEW C-C'
(NEAR BLACKBURN COURT ONLY)

SCALE: NOT TO SCALE



NOTES:
1. SMALL STONES SHALL BE USED TO MINIMIZE VOID SPACE BETWEEN STEP AND FOOTER BOULDERS.
2. ROCK SHALL BE GRANITE AND TAN, BROWN, OR GREY IN COLOR. NO WHITE STONE SHALL BE USED.
3. CROSS-SECTIONAL DIMENSIONS AND LONGITUDINAL SPACING OF FEATURES VARY. SEE CROSS SECTIONS AND PROFILES FOR DIMENSIONS.

ARMORED LOG STEP POOL – PLAN VIEW
(NEAR BLACKBURN COURT ONLY)

SCALE: NOT TO SCALE

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STREAM DETAILS & NOTES

DRAWN BY: JP
DESIGNED BY: JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 37 OF 43
DATE : 06/05/18

SCALE: 1 inch

EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_OVERALL\CAD Files\Sheet Files\4_3801_DTL01.dwg

SPSC STRUCTURE TABLE

STRUCTURE ID	POINT ID	NORTHING	EASTING	STATION (PR. MAIN STEM)	GRADE BREAK ELEVATION	TYPE
SPSC-1	D	632,921.95	1,498,729.02	0+74.25	70.50	I
	E	632,924.68	1,498,721.49	0+82.25	69.50	
SPSC-2	D	632,923.99	1,498,680.63	1+24.25	69.50	I
	E	632,921.24	1,498,673.11	1+32.25	68.50	
SPSC-3	D	632,895.98	1,498,640.83	1+74.25	68.50	I
	E	632,888.66	1,498,637.69	1+82.25	67.50	
SPSC-4	D	632,842.20	1,498,614.04	2+36.5	61.50	I
	E	632,835.26	1,498,610.08	2+44.5	60.50	
SPSC-5	D	632,818.42	1,498,575.11	2+84.25	60.50	I
	E	632,816.23	1,498,567.41	2+92.25	59.50	
SPSC-6	D	632,828.75	1,498,513.68	3+49.00	54.50	I
	E	632,830.26	1,498,505.83	3+57.00	53.50	
SPSC-7	D	632,836.03	1,498,470.09	3+93.20	53.50	I
	E	632,837.77	1,498,462.33	4+01.20	52.50	

STEP POOL STRUCTURE TABLE

STRUCTURE ID	POINT ID	NORTHING	EASTING	STATION (PR. MAIN STEM)	GRADE BREAK ELEVATION	TYPE
SP-1	A	632,843.27	1,498,440.63	4+25.00	48.80	I
SP-2	A	632,838.10	1,498,422.55	4+45.00	47.70	I
SP-3	A	632,837.40	1,498,406.62	4+65.00	46.60	I
SP-4	A	632,840.22	1,498,385.40	4+85.00	45.50	I
SP-5	A	632,833.28	1,498,369.86	5+05.00	44.40	I
SP-6	A	632,839.76	1,498,352.14	5+25.00	43.30	I
SP-7	A	632,844.77	1,498,333.47	5+45.00	42.20	I
SP-8	A	632,846.08	1,498,314.41	5+65.00	41.10	I
SP-9	A	632,854.94	1,498,298.53	5+85.00	40.00	I
SP-10	A	632,855.29	1,498,279.71	6+05.00	38.90	I
SP-11	A	632,846.14	1,498,262.64	6+25.00	37.80	I
SP-12	A	632,839.84	1,498,243.74	6+45.00	36.70	I
SP-13	A	632,833.06	1,498,225.58	6+65.00	35.60	I
SP-14	A	632,845.63	1,498,210.66	6+85.00	34.50	I
SP-15	A	632,845.68	1,498,189.67	7+10.00	33.00	I
SP-16	A	632,840.07	1,498,171.34	7+30.00	31.90	I
SP-17	A	632,832.32	1,498,153.24	7+50.00	30.80	I
SP-18	A	632,818.43	1,498,139.02	7+70.00	29.70	I
SP-19	A	632,817.16	1,498,119.37	7+90.00	28.60	I
SP-20	A	632,811.31	1,498,101.18	8+10.00	27.50	I
SP-21	A	632,798.76	1,498,086.42	8+30.00	26.40	I
SP-22	A	632,784.21	1,498,073.10	8+50.00	25.30	I
SP-23	A	632,768.28	1,498,034.28	8+70.00	24.20	I
SP-24	A	632,758.82	1,498,043.83	8+90.00	23.20	I
SP-25	A	632,756.46	1,498,024.04	9+10.00	22.20	I
SP-26	A	632,754.90	1,498,004.23	9+30.00	21.20	I
SP-27	A	632,763.02	1,497,987.20	9+50.00	20.20	I
SP-28	A	632,935.77	1,497,849.84	11+80.00	15.50	I
SP-29	A	632,955.22	1,497,846.26	12+00.00	14.80	I
SP-30	A	632,980.75	1,497,844.37	12+26.00	13.90	I

CONSTRUCTED RIFFLE STRUCTURE TABLE

STRUCTURE ID	POINT ID	NORTHING	EASTING	STATION (PR. MAIN STEM)	GRADE BREAK ELEVATION	TYPE
CR-1	B	632,777.75	1,497,973.69	9+70.00	19.8	I
	C	632,793.48	1,497,961.43	9+90.00	19.0	
CR-2	B	632,812.35	1,497,955.20	10+10.00	18.9	I
	C	632,832.08	1,497,952.18	10+30.00	18.2	
CR-3	B	632,854.55	1,497,934.97	10+59.00	18.1	I
	C	632,865.28	1,497,916.78	10+80.00	17.4	
CR-4	B	632,879.03	1,497,905.36	10+98.00	17.3	I
	C	632,894.38	1,497,898.08	11+15.00	16.7	
CR-5	B	632,912.72	1,497,878.68	11+42.00	16.5	I
	C	632,920.60	1,497,862.54	11+60.00	16.0	
CR-6	B	632,996.30	1,497,832.17	12+46.00	12.9	I
	C	633,003.49	1,497,817.94	12+62.00	12.6	
CR-7	B	633,019.43	1,497,797.68	12+88.00	12.5	I
	C	633,029.30	1,497,790.99	13+00.00	12.2	
CR-8	B	633,040.18	1,497,760.31	13+34.64	12.1	I
	C	633,036.71	1,497,744.39	13+51.23	11.3	

STONE SIZING TABLE

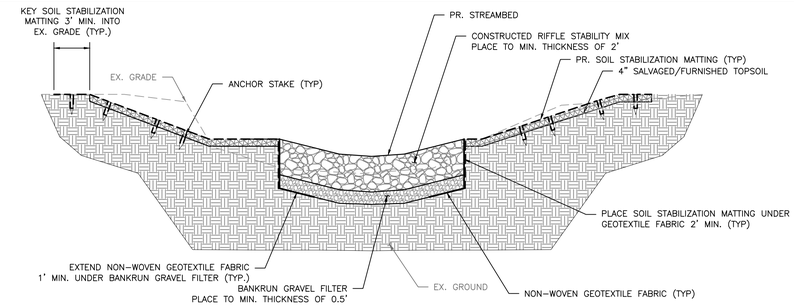
STRUCTURE	MATERIAL	SIZING	% OF MIX
LOG/POOL STEP	FOOTER BOULDER	2.5'x2'x1.5'	---
	STEP BOULDER	2.5'x2'x1'	---
	POOL BEDDING MATERIAL	COBBLE = 6"	70
		CL. I RIPRAP D50 (IN.) = 9.5"	30
CONSTRUCTED RIFFLE	CONSTRUCTED RIFFLE STABILITY MIX	COBBLE = 6"	20
		CL. I RIPRAP D50 (IN.) = 9.5"	50
		CL. II RIPRAP D50 (IN.) = 16"	30
	BANKRUN GRAVEL	SEE BANKRUN GRAVEL NOTE THIS SHEET	
SILL ROCK GRADE CONTROL	FOOTER BOULDER	2.5'X2'X1.5'	---
	BANKRUN GRAVEL	SEE BANKRUN GRAVEL NOTE THIS SHEET	
SPSC	COBBLE	D50 = 6"	---
	BOULDERS	GREATER THAN 6'X2'X2'	10
		3'X2'X2' TO 6'X2'X2'	80
		LESS THAN 3'X2'X2'	10
	SAND/WOODCHIP MIX	SAND: 0.02"-0.04" (AASHTO M-6 OR ASTM C-33)	---

SUITABLE BACKFILL

SUITABLE BACKFILL MATERIAL SHALL MEET THE REQUIREMENTS OF HARFORD COUNTY SPEC 916.01.01 OR AS DIRECTED BY THE COUNTY. CONTRACTOR SHALL USE ALL SUITABLE ONSITE MATERIAL PRIOR TO IMPORT OF MATERIAL. ANY REMOVAL OF ONSITE MATERIAL REQUIRES APPROVAL FROM THE COUNTY.

BANK RUN GRAVEL

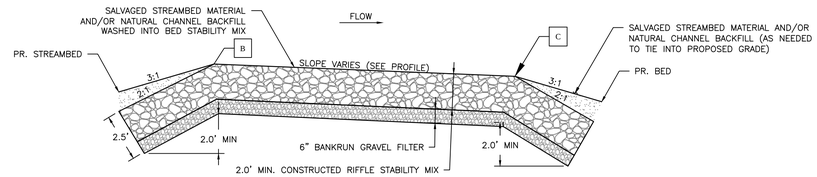
BANK RUN GRAVEL SHALL MEET THE AGGREGATE GRADING REQUIREMENTS AS SPECIFIED IN AGGREGATE BASE AND SUBBASE COURSES OF HARFORD COUNTY SPEC 901.01 OR AS DIRECTED BY THE COUNTY. IT SHALL BE A MIX OF EQUAL PARTS BANK RUN GRAVEL SUBBASE COURSE AND COARSE AGGREGATE FOR BASE COURSE.



NOTE: SEE CROSS SECTIONS AND GRADING PLANS FOR PROPOSED GRADES

CONSTRUCTED RIFFLE - SECTION VIEW

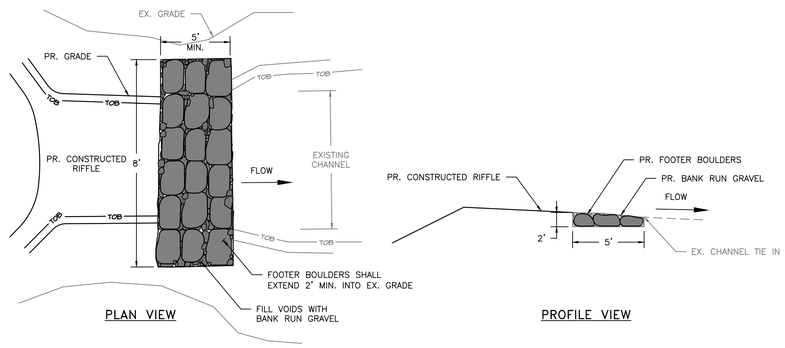
SCALE: NOT TO SCALE



CONSTRUCTED RIFFLE PROFILE (SHOWN AT THALWEG)

SCALE: NOT TO SCALE

1. COMPACT SALVAGED STREAMBED MATERIAL AND/OR NATURAL CHANNEL BACKFILL TO MATCH PROPOSED GRADE UNLESS OTHERWISE SPECIFIED.
2. CROSS-SECTIONAL DIMENSIONS AND LONGITUDINAL SPACING OF FEATURES VARY. SEE CROSS-SECTIONS AND PROFILES FOR DIMENSIONS OF EACH INDIVIDUAL STRUCTURE.
3. SMALL AND LARGE STONES SHALL BE MIXED TO MINIMIZE VOID SPACES. STONE MUST BE PLACED IN A MANNER TO PROMOTE INTERLOCKING. DUMPING STONE WILL NOT BE PERMITTED.
4. THALWEG SHALL BE CONSTRUCTED PER THE CROSS SECTIONS.
5. SALVAGED STREAM BED MATERIAL AND/OR NATURAL CHANNEL BACKFILL SHALL BE WASHED INTO BED STABILITY MIX TO ENSURE SURFACE FLOW.
6. POINT COORDINATES ARE LOCATED AT THE GRADE BREAKS OF THE RIFFLE ALONG THE PROPOSED CENTERLINE.



SILL ROCK CONTROL STRUCTURE DETAIL

SCALE: NOT TO SCALE

SILL ROCK GRADE CONTROL STRUCTURE NOTES

1. INSTALLATION OF THE ROCK SILL WILL INVOLVE EXCAVATING A TRENCH ACROSS THE EXISTING STREAMBED AND BACKFILLING WITH LARGE BOULDERS TO FORM THE MAIN COMPONENTS OF THE SILL STRUCTURE. SMALL BOULDERS, COBBLE AND GRAVEL SIZED MATERIAL WILL BE UTILIZED TO FILL THE VOIDS BETWEEN THE BOULDERS AND COMPLETE THE SILL STRUCTURES.
2. THE ROCKS SHALL CONSIST OF ROUND, SUBANGULAR, OR ANGULAR ROCK, SIMILAR IN COLOR, TEXTURE AND DENSITY TO THE NATIVE ROCK ON THE SITE.
3. THE DIMENSIONS OF THE BOULDERS WILL BE A MINIMUM OF 1.5 FOOT AND MAXIMUM OF 2.5 FEET IN DIAMETER. THE COBBLE SIZE MATERIAL WILL RANGE FROM 2.5 INCHES TO 10 INCHES IN DIAMETER AND THE GRAVEL SIZE MATERIAL WILL RANGE FROM 0.5 INCHES TO 2 INCHES IN DIAMETER.
4. THE ROCK SILLS SHALL BE CONSTRUCTED PERPENDICULAR TO THE FLOW, EXTENDING A MINIMUM OF 2 FT INTO THE EXISTING CHANNEL SLOPE FROM BOTTOM OF SLOPE.

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
STREAM DETAILS & NOTES

DRAWN BY: JP/EM/BF
DESIGNED BY: JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 38 OF 43
DATE : 06/05/18

EG-SWMENG-_____-____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com

BAYLAND JOB NO. 4_3801

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE - 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_OVERALL\CAD Files\Sheet Files\4_3801_DTL03.dwg

STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

A. SOIL PREPARATION

1. TEMPORARY STABILIZATION

a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.

b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.

c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

2. PERMANENT STABILIZATION

a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

i. SOIL PH BETWEEN 6.0 AND 7.0.

ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).

iii. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.

iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.

v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.

b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.

c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.

d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.

e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING

1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.

3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:

a. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.

b. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.

c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.

d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.

5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:

a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1½ INCHES IN DIAMETER.

b. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

6. TOPSOIL APPLICATION

a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.

b. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

c. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.

2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.

3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.

4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7a SEED MIXTURE (FROM TABLE B.1)					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS		
1	ANNUAL RYEGRASS	40 (1lb/1000 sf)	2/15 – 4/30 8/15 – 11/30	0.5"	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
2	BARLEY	96 (2.2lb/1000 sf)	2/15 – 4/30 8/15 – 11/30	0.5"		
3	OATS	72 (1.7lb/1000 sf)	2/15 – 4/30 8/15 – 11/30	0.5"		
4	RYE	112 (2.8lb/1000 sf)	2/15 – 4/30 8/15 – 11/30	0.5"		
5	FOXTAIL MILLET	30 (0.7lb/1000 sf)	5/1 – 8/14	0.5"		

SPSC STABILIZATION NOTES

1. TEMPORARY STABILIZATION FOR ANY AREA OF EARTH DISTURBANCE AROUND THE POOLS AND RIFFLE ZONES OF A STREAM RESTORATION PROJECT SHALL BE CONSIDERED ACHIEVED WHEN COVERING AREA WITH 4 TO 8 INCHES OF COMPOST OR 2 TO 4 INCHES OF WOOD CHIPS.

2. PERMANENT STABILIZATION FOR AN AREA OF EARTH DISTURBANCE AROUND THE POOLS AND RIFFLES ZONE OF A STREAM RESTORATION PROJECT SHALL BE CONSIDERED ACHIEVED WHEN COVERING THE AREA WITH 4 INCHES OF COMPOST OR 2 TO 4 INCHES OF WOOD CHIPS AND THE PLANTING PLAN HAS BEEN IMPLEMENTED.

3. THE CONTRACTOR WILL NEED TO DEWATER VIA SUMP PIT AND FILTER BAG WHEN NECESSARY DURING GRADING OF STEP POOLS.

STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

A. SEEDING

1. SPECIFICATIONS

a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.

b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.

c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.

d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

2. APPLICATION

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.

i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.

ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.

b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.

i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.

ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).

i. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.

ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.

b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

i. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.

ii. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

iv. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

v. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

2. APPLICATION

a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.

c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

3. ANCHORING

a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:

i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.

ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRATACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.

iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7a SEED MIXTURE (FROM TABLE B.3)					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P_2O_5	K_2O	
1	SWITCHGRASS CREEPING RED FESCUE BUSH CLOVER	10 15 2	2/15 – 4/30 8/15 – 10/31	½" – ¼"	45 lb/ac (1.0 lb/ 1000 sf)	90 lb/ac (2.0 lb/ 1000 sf)	90 lb/ac (2.0 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
3	DEERTONGUE SHEEP FESCUE COMMON LESPEDEZA	20 20 10	2/15 – 4/30 8/15 – 10/31	½" – ¼"				

NOTES:

1. SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES. SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS, WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE. OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.

2. FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.

3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

HARFORD COUNTY SEDIMENT CONTROL NOTES

1. A GRADING UNIT OF 20 ACRES IS THE MAXIMUM CONTIGUOUS AREA ALLOWED TO BE GRADED AT A GIVEN TIME.

2. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY DPW. NO MORE THAN THIRTY ACRES CUMULATIVELY MAY BE DISTURBED AT ANY GIVEN TIME.

3. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.

4. THE LIMITS OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO GRADING OF THE SITE TO ENSURE COMPLIANCE WITH APPROVED PLANS. ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO ANY CLEARING. WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.

5. ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL FROM DPW.

6. ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.

7. EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MINOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.

8. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:

A) THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
B) SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT SITE.

9. DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.

10. SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FUTURE SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.

11. TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.

12. AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOI/NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.

13. ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.

14. CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.

15. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.

16. OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.

17. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.

18. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.

19. TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL ESSENTIAL PARTS OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.

20. TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.

21. PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED.

22. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

BEST MANAGEMENT PRACTICES FOR WORKING IN NON TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS AND 100 YEAR FLOOD PLAINS

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, WATERWAYS OR THE 100-YEAR FLOODPLAIN.

2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, WATERWAYS OR THE 100 YEAR FLOODPLAIN.

3. DO NOT USE EXCAVATED MATERIAL AS BACK FILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACK FILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.

4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, OR WATERWAYS OR THE 100 YEAR FLOODPLAIN.

5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NON TIDAL WETLANDS, NON TIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100 YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.

6. RECTIFY ANY NON TIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS OR 100 YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

7. ALL STABILIZATION IN THE NON TIDAL WETLAND AND NON TIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS(LOLIUM MULTIFLORUM), MILLET(SETARIA ITALICA), BARLEY(HORDEUM SP.), OATS (UNIOLA SP), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NON TIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION

8. AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.

9. TO PROTECT AQUATIC SPECIES, IN STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:

9.1. USE I WATERS: IN STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THRU JUNE 15, INCLUSIVE, DURING ANY YEAR.

10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.

11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

CARE OF WATER DURING CONSTRUCTION

1. CLEANWATER DIVERSIONS FROM POINT SOURCES MAYBE OMITTED IF NO BASE FLOW IS PRESENT.

2. BECAUSE OF SEASONAL VARIATIONS IN FLOW, THE SIZE OF PUMP AND THE SIZE AND TYPE OF PIPING NECESSARY TO CONVEY CLEANWATER FOR ANY PUMPED CLEANWATER DIVERSIONS SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE SEDIMENT CONTROL INSPECTOR. CARE SHOULD BE TAKEN BY THE CONTRACTOR AS TO NOT OVER OR UNDERSIZE THE PUMP/PIPING NECESSARY TO CONVEY ANY BASE FLOW.

3. DIVERSION PIPES, PUMPS, SUMP PITS, AND ASSOCIATED SEDIMENT FILTRATION DEVICES SHALL BE FIELD LOCATED BY THE CONTRACTOR AND ARE SHOWN ON THE PLANS TO ILLUSTRATE POTENTIAL ALIGNMENTS AND PLACEMENT.

4. WITH THE SEDIMENT CONTROL INSPECTORS APPROVAL, ANY DIVERSION PIPES, PUMPS, SUMP PITS, AND ASSOCIATED SEDIMENT FILTRATION DEVICES MAY BE RELOCATED WITHIN THE LIMIT OF DISTURBANCE TO ACCOMMODATE CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST.

5. THE CONTRACTOR SHALL SUFFICIENTLY DEWATER THE WORK AREA BEFORE COMMENCING ANY GRADING OPERATIONS. ADDITIONAL SUMP PUMPS, AT NO ADDITIONAL COST, MAY BE NECESSARY AT LOCATIONS WHERE GROUNDWATER IS INFILTRATING THE WORK AREA.

6. DEWATERING OF THE WORK AREA MAY REQUIRE ADDITIONAL TREATMENT BEYOND AN APPROVED DEWATERING PRACTICE TO REDUCE TURBIDITY IN THE DISCHARGE TO RECEIVING WATERS.

7. ANY FUEL SHALL BE STORED ABOVE THE 100-YR FLOOD ELEVATION.

8. THE CONTRACTOR SHALL ENSURE THAT ALL SEDIMENT CONTROLS ARE IN WORKING CONDITION AT THE END OF EACH WORKING DAY TO PREVENT SEDIMENT LADEN MATERIAL FROM DISCHARGING FROM THE WORK AREA.

9. USE FLOCCULANT AS NEEDED TO ADDRESS SEDIMENT DISCHARGE ISSUES (POND CLEAR OR APPROVED EQUIVALENT). FLOCCULANT SHALL BE ANIONIC AND NON-TOXIC.

EXCAVATION NOTES

1. AT A MINIMUM ANY SATURATED SEDIMENT SHALL BE PARTIALLY DEWATERED ON-SITE BEFORE TRANSPORT TO THE DISPOSAL AREA.

2. THE DISPOSAL SITE SHALL HAVE AN ACTIVE GRADING PERMIT.

3. SATURATED MATERIAL SHALL BE TRANSPORTED IN LINED OR WATER TIGHT TRUCKS, ADEQUATELY COVERED/TARPED OVER THE TOP. SUFFICIENT FREEBOARD MUST BE MAINTAINED TO PREVENT SPILLING OVER THE SIDES.

4. CONTRACTOR SHALL KEEP STREET FREE OF ANY EXCAVATED MATERIAL. IF NECESSARY, CONTRACTOR MAY BE REQUIRED TO PERFORM ROUTINE STREET SWEEPING AND/OR STREET CLEANING.

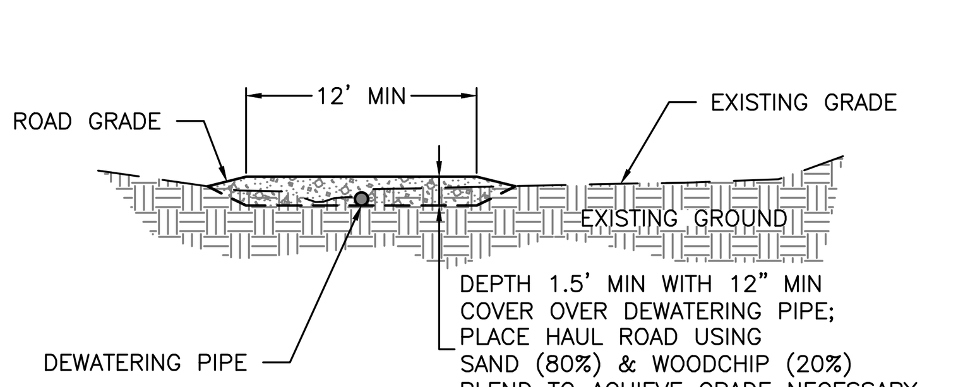
NOTES

1. ANY STOCKPILES SHALL BE WITHIN THE FACILITY BOTTOM FOOTPRINT. MAXIMUM HEIGHT SHALL NOT EXCEED 15 FEET & MAXIMUM SLOPE SHALL NOT EXCEED 2:1.

2. WITH SEDIMENT CONTROL INSPECTOR APPROVAL, STOCKPILING AND STAGING SHALL OCCUR WITHIN THE LIMIT OF DISTURBANCE, BE STABILIZED WITH 4"-6" OF MULCH.

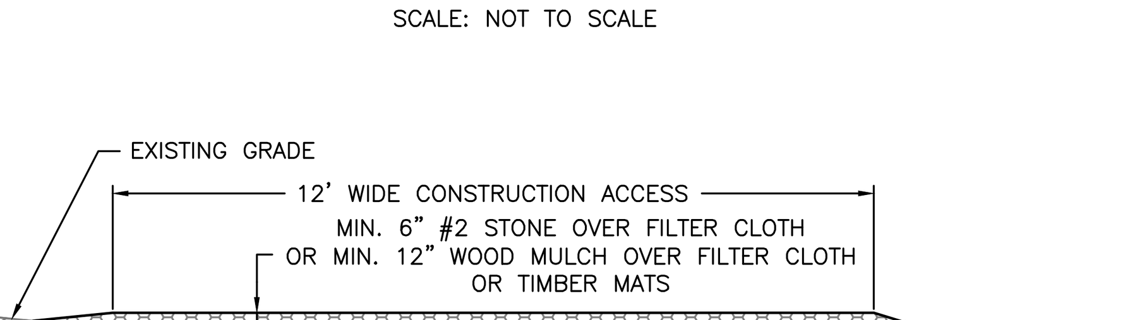
3. THE CONTRACTOR MUST MAINTAIN 10 FT OF CLEARANCE AT ALL TIMES FROM ELECTRIC LINES IN ORDER TO COMPLY WITH THE MARYLAND HIGH VOLTAGE LINE ACT. THE CONTRACTOR SHALL CONDUCT A TEST PIT IF THE CREW IS DIGGING NEAR ANY ELECTRIC CABLE.

4. ANY DAMAGE TO RESIDENTIAL DRIVEWAY AND PUBLIC ROADS RESULTING FROM CONSTRUCTION TO BE REPAIRED AND REPLACED IN KIND.



HAUL ROAD

SCALE: NOT TO SCALE

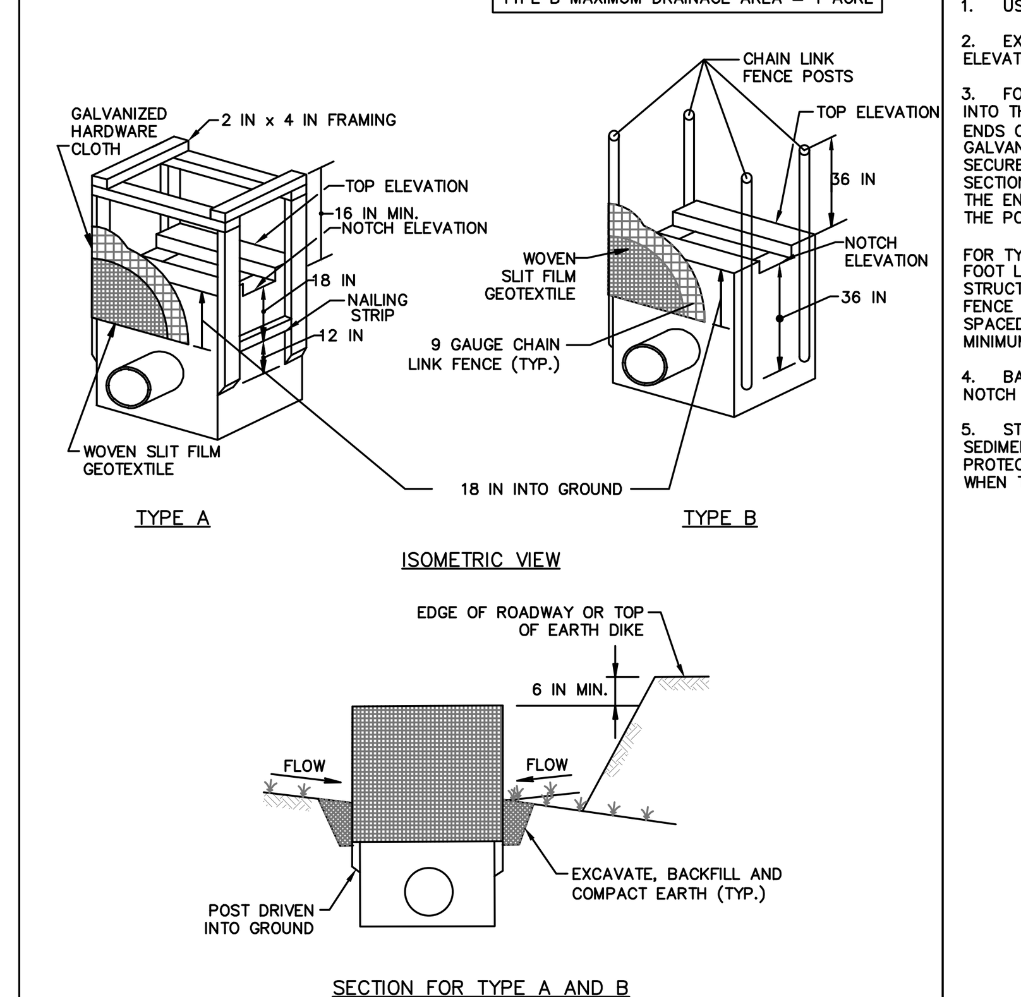


TEMPORARY CONSTRUCTION ACCESS ROAD

SCALE: NOT TO SCALE

DETAIL E-9-1 STANDARD INLET PROTECTION — STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION — STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.

3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.

4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.

5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

60% DESIGN

EG-SWMENG-_______-_____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
SEDIMENT CONTROL NOTES & DETAILS

DRAWN BY: EM
DESIGNED BY: EM
REVIEWED BY: CJS

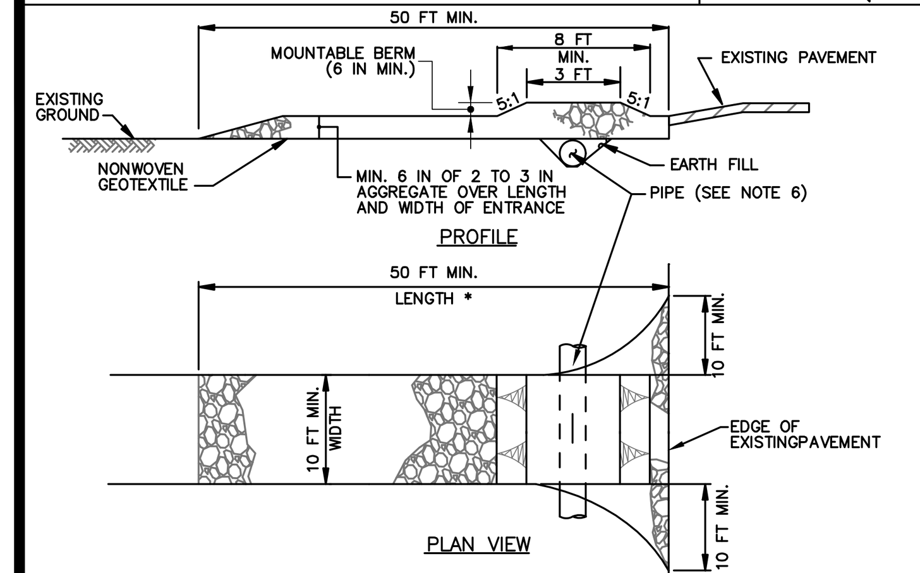
CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 39 OF 43
DATE : 06/05/18

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE : 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_ESC04.dwg

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

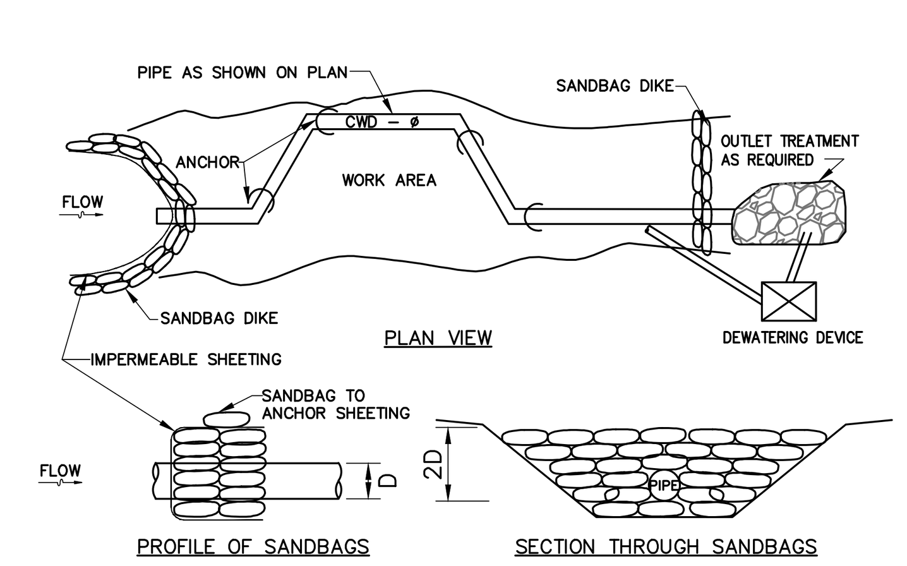
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-6 CLEAR WATER DIVERSION PIPE

STANDARD SYMBOL: CWD – 12
DESIGNATION CWD-12 REFERS TO 12 INCH CLEAR WATER DIVERSION.



CONSTRUCTION SPECIFICATIONS

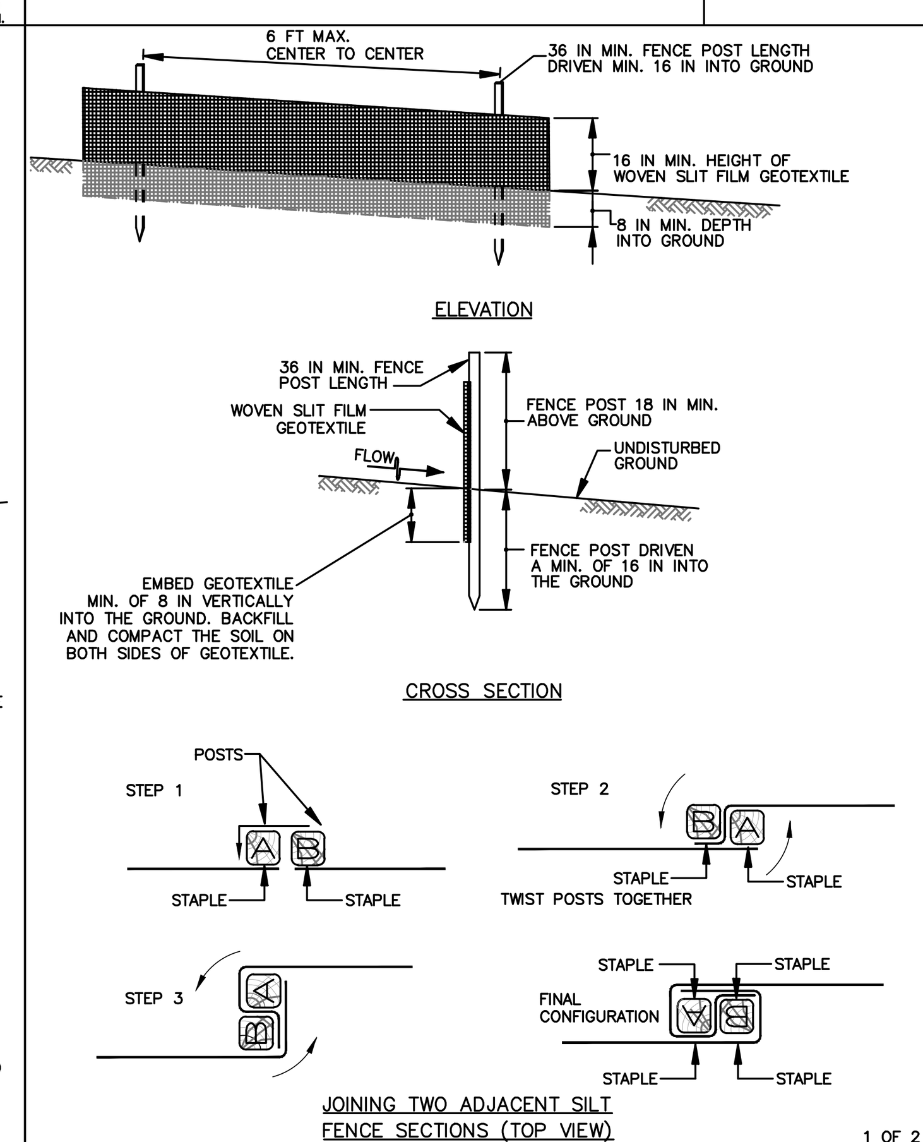
1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNTURING AND TEARING.
4. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
5. SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
6. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
7. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
8. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
10. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1⁄16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

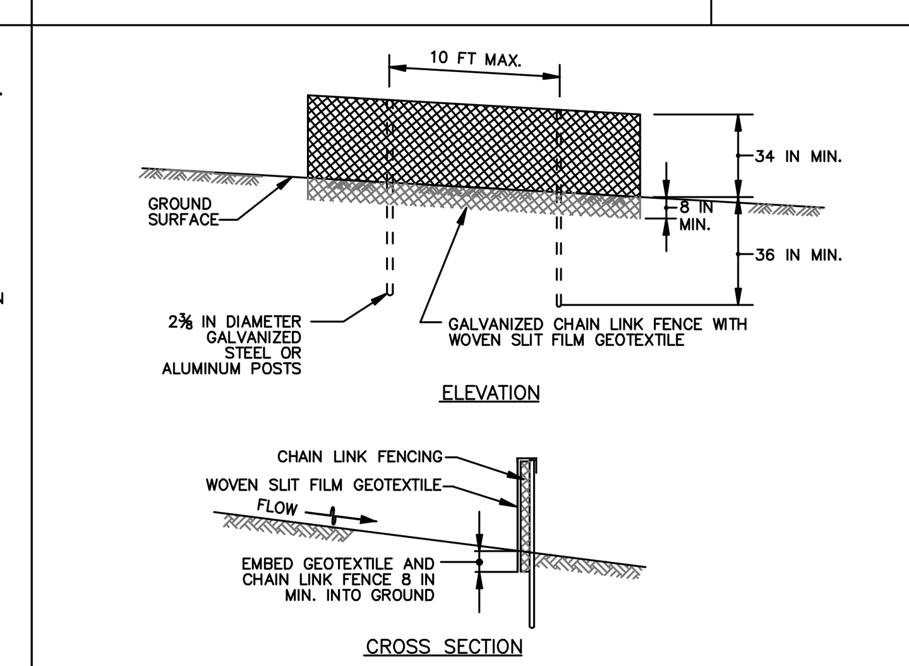
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

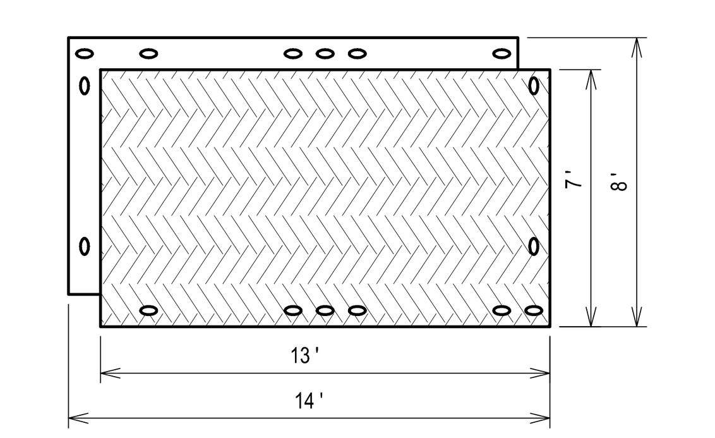
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

WETLAND PROTECTION MATTING

STANDARD SYMBOL



GENERAL SPECIFICATIONS

LARGE MAT
- OVERALL DIMENSIONS: 8 ' x 14 '
- SURFACE DIMENSIONS: 7 ' x 13 '
- WEIGHT: VARIABLE (SEE BELOW)

ALL MEASUREMENTS AND WEIGHTS ARE NOMINAL.

EACH MAT IS EQUIPPED WITH A LIP ON TWO SIDES THAT CREATE AN OVERLAPPING JOINT WITH AN ADJOINING MAT. EACH MAT IS ALSO EQUIPPED WITH 16 SLOTS INTO WHICH LOCKING PINS ARE INSERTED AND ENGAGED IN ORDER TO FASTEN MULTIPLE MATS TOGETHER. WETLAND PROTECTION MATTING MUST BE INSTALLED AT RIGHT ANGLES AND JOINED TOGETHER WITH PINS WHEN USED FOR WETLAND PROTECTION.

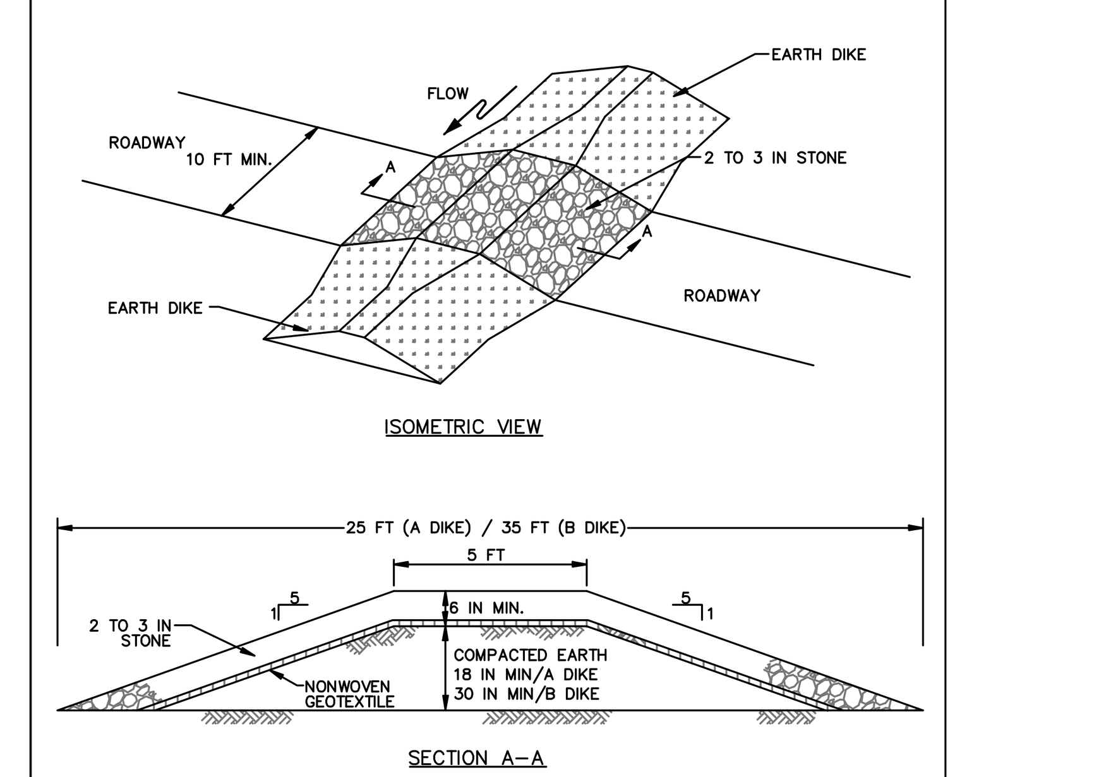
THE USE OF INTERLOCKING COMPOSITE MATTING IS THE PREFERRED CHOICE FOR ACCESSING WETLANDS. ALL MATTING INSTALLATIONS MUST ADHERE TO AVOIDANCE AND MINIMIZATION PRINCIPLES TO CREATE THE LEAST POTENTIAL IMPACT OF THE PROTECTED RESOURCE WHILE SAFELY ACCOMPLISHING THE NECESSARY WORK. THE TYPE OF MATTING, QUANTITY, SIZE AND DESIGN MUST TAKE INTO CONSIDERATION THE WEIGHT, SIZE AND MOVEMENT OF THE EQUIPMENT THAT WILL BE USING THE TEMPORARY ACCESS STRUCTURE. THE CONTRACTOR IS EXPECTED TO FOLLOW MANUFACTURER RECOMMENDATIONS. WHEN CONSIDERING DESIGN LOADING (EQUIPMENT WEIGHT), ONE MUST INCLUDE THE WEIGHT OF MATERIALS THAT THE EQUIPMENT WILL BE HANDLING SUCH AS PILES, STRUCTURES, LOADED CONCRETE TRUCKS, BUCKETS, CRANES AND OTHER APPARENT IMPACTS TO WEIGHT OR STRESSES. THIS GUIDANCE IS BASED UPON THE ENHANCED ABILITY TO OBTAIN PERMISSION FROM THE APPROPRIATE AGENCIES BY UTILIZING THIS TECHNOLOGY TO PERFORM WORK WITHIN ENVIRONMENTALLY SENSITIVE AREAS.

ALL CONSTRUCTION TRAFFIC AND WORK AREAS IN WETLANDS AND WETLAND BUFFERS TO USE COMPOSITE MATTING. APPROVED COMPOSITE MATTING SUPPLIERS INCLUDE:

- DURA BASE	1000 LBS	COMPOSITE CAM LOCKING SYSTEM	4IN HOLLOW REINFORCED CORE
- SURETRAK	800 LBS	ALUMINUM CAM LOCKING SYSTEM	1.5IN SOLID
- RUGGED ROAD	1050 LBS	ALUMINUM CAM LOCKING SYSTEM	4.25IN REINFORCED HOLLOW CORE
- MEGA DECK	1050 LBS	ALUMINUM CAM LOCKING SYSTEM	4.25IN REINFORCED HOLLOW CORE
- MEGA DECK SLP	800 LBS	ALUMINUM CAM LOCKING SYSTEM	1.5IN SOLID

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL: MB



CONSTRUCTION SPECIFICATIONS

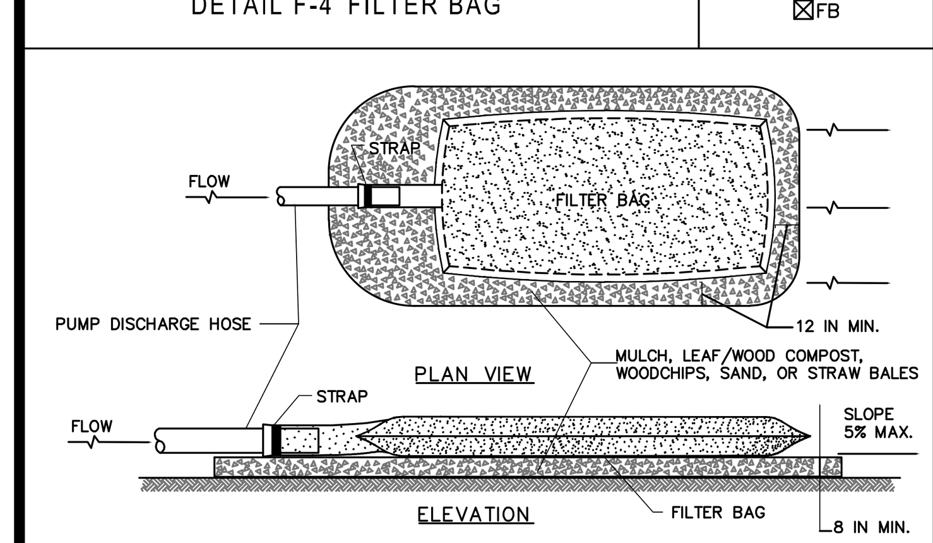
1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-4 FILTER BAG

STANDARD SYMBOL: ⊠FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15–0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

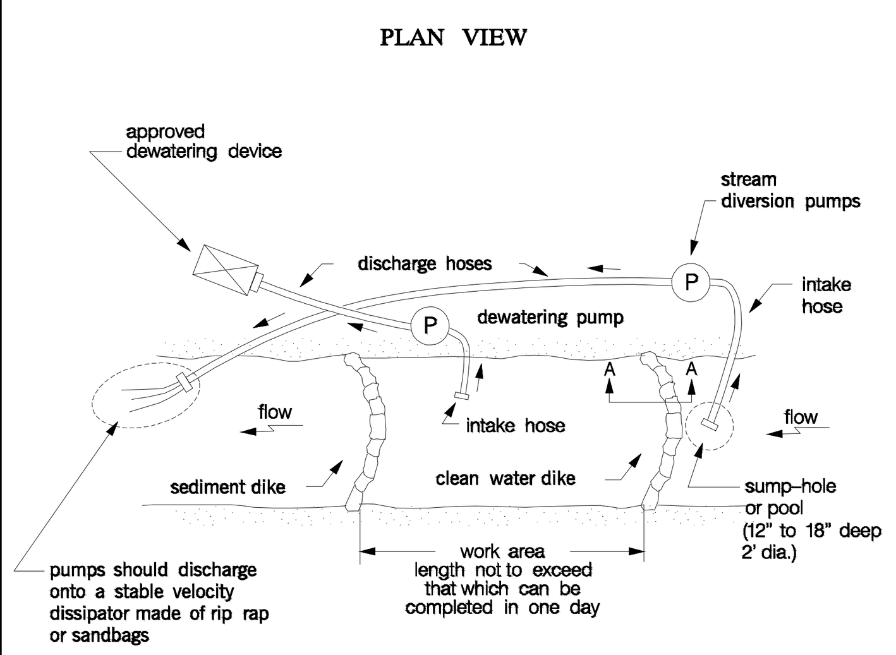
6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

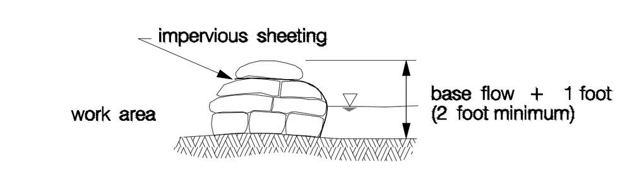
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP–AROUND PRACTICE

PLAN VIEW



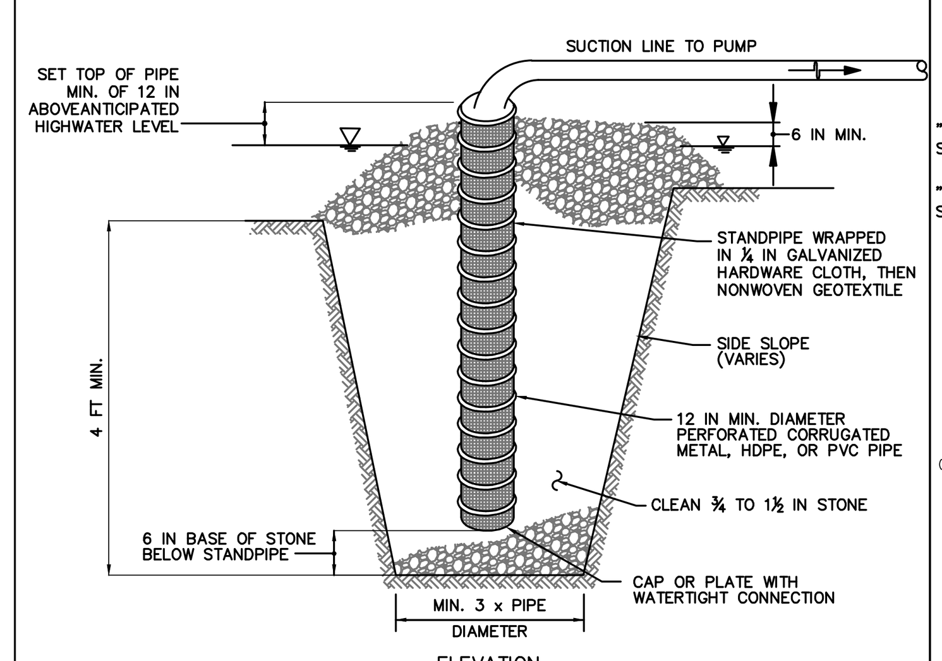
SECTION A–A



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.2 - 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-2 SUMP PIT

STANDARD SYMBOL: ⊠SP



CONSTRUCTION SPECIFICATIONS

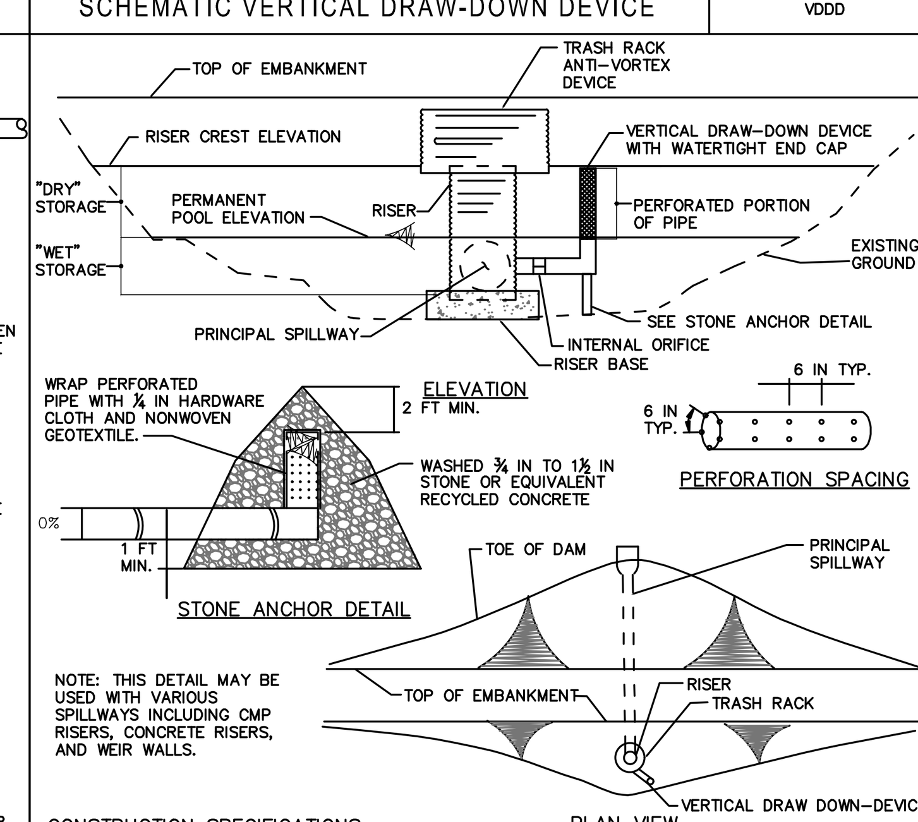
1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
2. WRAP PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-7 SEDIMENT BASIN SCHEMATIC VERTICAL DRAW-DOWN DEVICE

STANDARD SYMBOL: VDDD



CONSTRUCTION SPECIFICATIONS

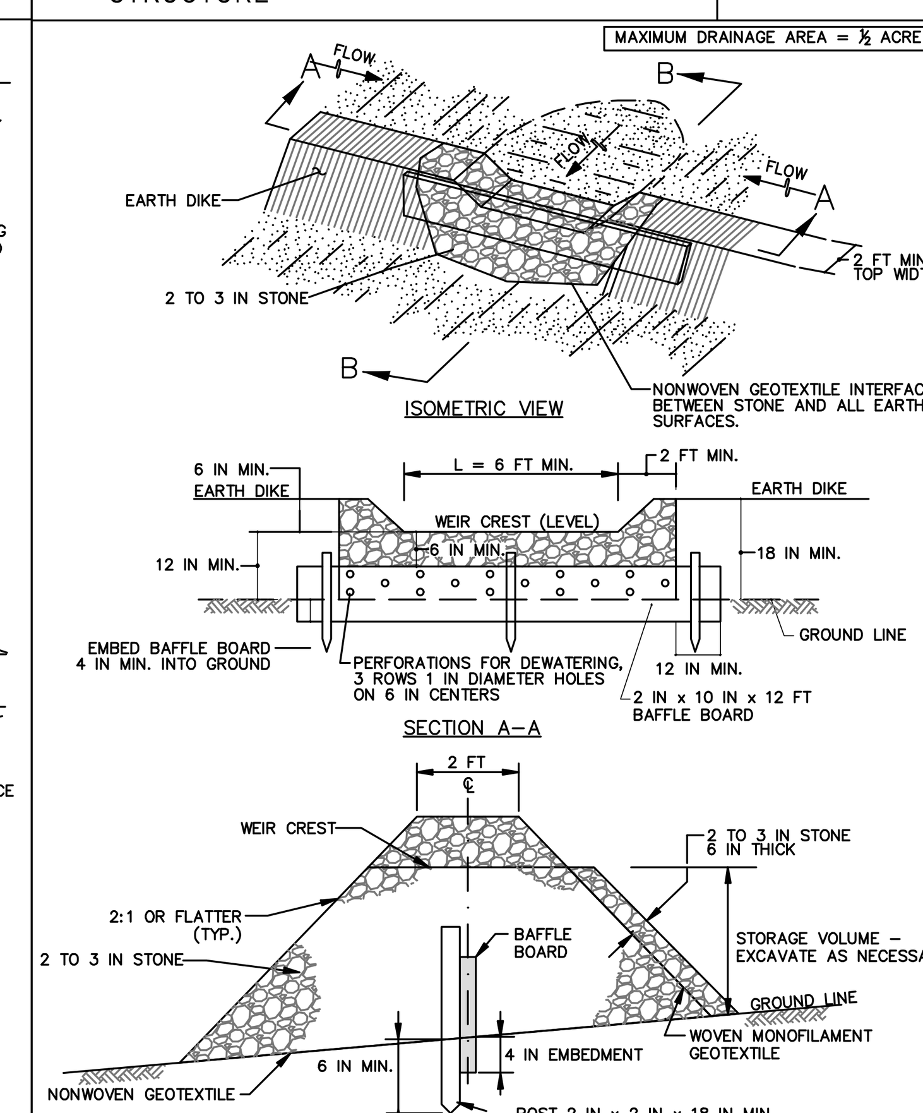
1. PERFORATE PIPE WITH 1 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDINALLY AND RADIALLY OR IN ACCORDANCE WITH APPROVED PLAN.
2. DO NOT EXTEND PERFORATIONS IN THE DRAW-DOWN DEVICE INTO WET STORAGE.
3. WRAP THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE FIRST WITH ¼ INCH GALVANIZED HARDWARE CLOTH, THEN WITH NONWOVEN GEOTEXTILE. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE.
4. AS AN ALTERNATE TO STONE ANCHORING, SECURE DRAW-DOWN DEVICE WITH TWO 1 INCH STEEL ANGLES SET 3 FEET MINIMUM INTO THE GROUND ATTACHED TO DRAW-DOWN DEVICE BY A 1 INCH WIDE GALVANIZED STEEL STRAP OR 12 GAUGE OR HEAVIER WIRE.
5. REMOVE SEDIMENT WHEN IT ACCUMULATES TO CLEANOUT ELEVATION (50% OF THE WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA IN A SUCH A MANNER THAT IT WILL NOT ERODE. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-7 TEMPORARY STONE OUTLET STRUCTURE

STANDARD SYMBOL: TSOS



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-7 TEMPORARY STONE OUTLET STRUCTURE

STANDARD SYMBOL: TSOS

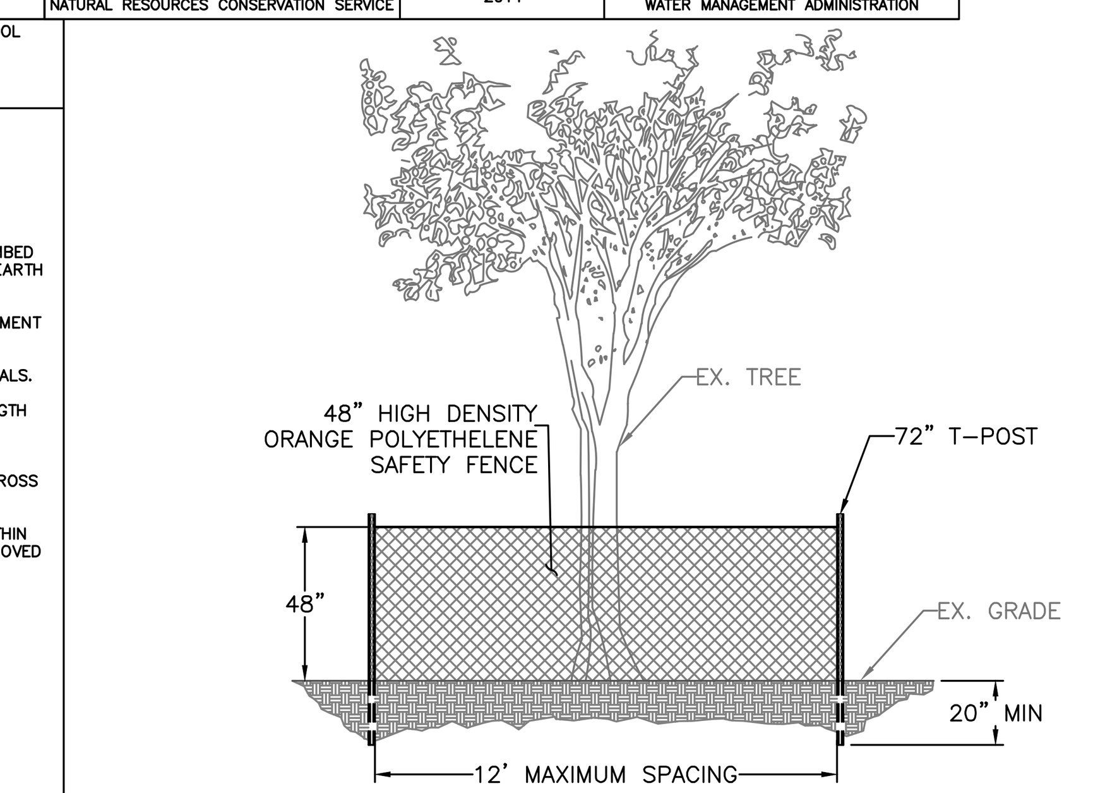
CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE NONWOVEN GEOTEXTILE ON INTERFACE BETWEEN GROUND AND STONE.
3. PERFORATE BAFFLE BOARD WITH 3 ROWS OF 1 INCH DIAMETER HOLES 6 INCHES ON CENTER, EMBED A MINIMUM OF 4 INCHES INTO GROUND, AND EXTEND BAFFEL BOARD MINIMUM OF 12 INCHES INTO EARTH DIKE.
4. USE CLEAN 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE. PLACE WOVEN MONOFILAMENT GEOTEXTILE ON UPSTREAM FACE AND COVER WITH A MINIMUM OF 6 INCHES OF ADDITIONAL STONE.
5. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
6. SET WEIR CREST OF STONE 6 INCHES LOWER THAN THE TOP OF EARTH DIKE. USE MINIMUM LENGTH OF 6 FEET FOR WEIR CREST.
7. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 6 INCHES OF WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO DRAIN. MAINTAIN LINE, GRADE, AND CROSS SECTION.
8. UPON REMOVAL OF STONE OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



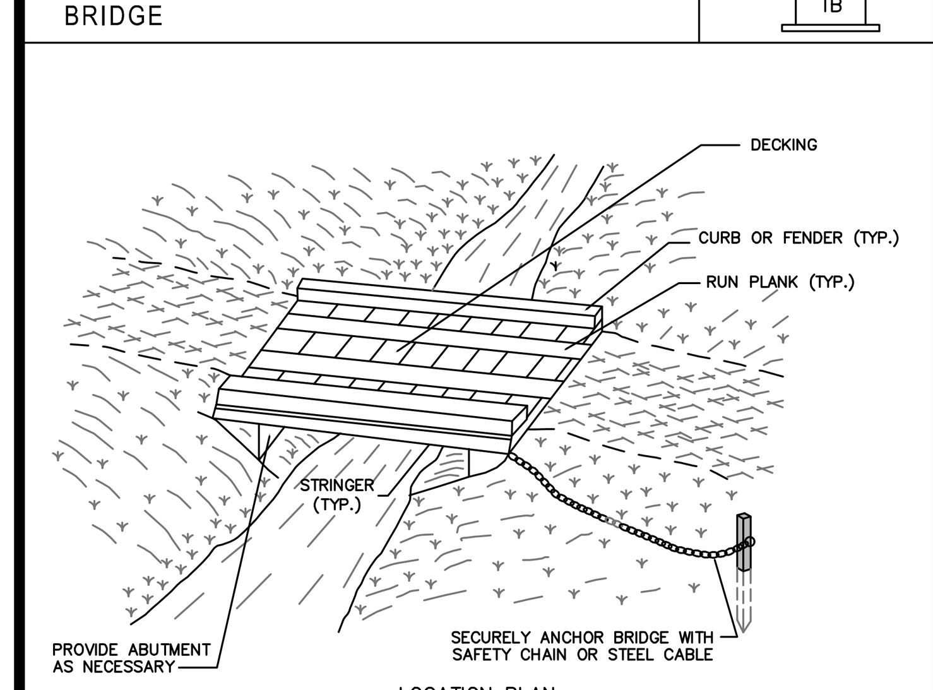
NOTES:
1. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
2. T–POST SHALL BE SPACED A MAXIMUM OF 12' O/C. AVOID ROOT DAMAGE WHEN PLACING THE T–POSTS.
3. THE HIGH VISIBILITY FENCE SHOULD BE FASTENED SECURELY TO THE T–POSTS WITH WIRE OR ZIP TIES.
4. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

TREE PROTECTION DETAIL

SCALE: NOT TO SCALE

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB



NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
2. PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
3. CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
4. USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
5. SELECT DECKING MATERIALS TO PROVIDE SUFFICIENT STRENGTH TO SUPPORT THE ANTICIPATED LOAD. PLACE ALL DECKING MEMBERS PERPENDICULAR TO THE STRINGERS, BUTT TIGHTLY, AND SECURELY FASTEN. DECKING MATERIALS MUST BE BUTTED TIGHTLY TO PREVENT ANY SOIL MATERIAL TRACKED ONTO THE BRIDGE FROM FALLING INTO THE WATERWAY BELOW.
6. SECURELY FASTEN OPTIONAL RUN PLANKING FOR THE LENGTH OF THE SPAN. PROVIDE A RUN PLANK FOR EACH TRACK OF THE EQUIPMENT WHEELS. ALTHOUGH RUN PLANKS ARE OPTIONAL, THEY MAY BE NECESSARY TO PROPERLY DISTRIBUTE LOADS.
7. INSTALL CURBS THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.
8. ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
9. AREAS DISTURBED DURING BRIDGE INSTALLATION AND\OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
10. STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURBS DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
11. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

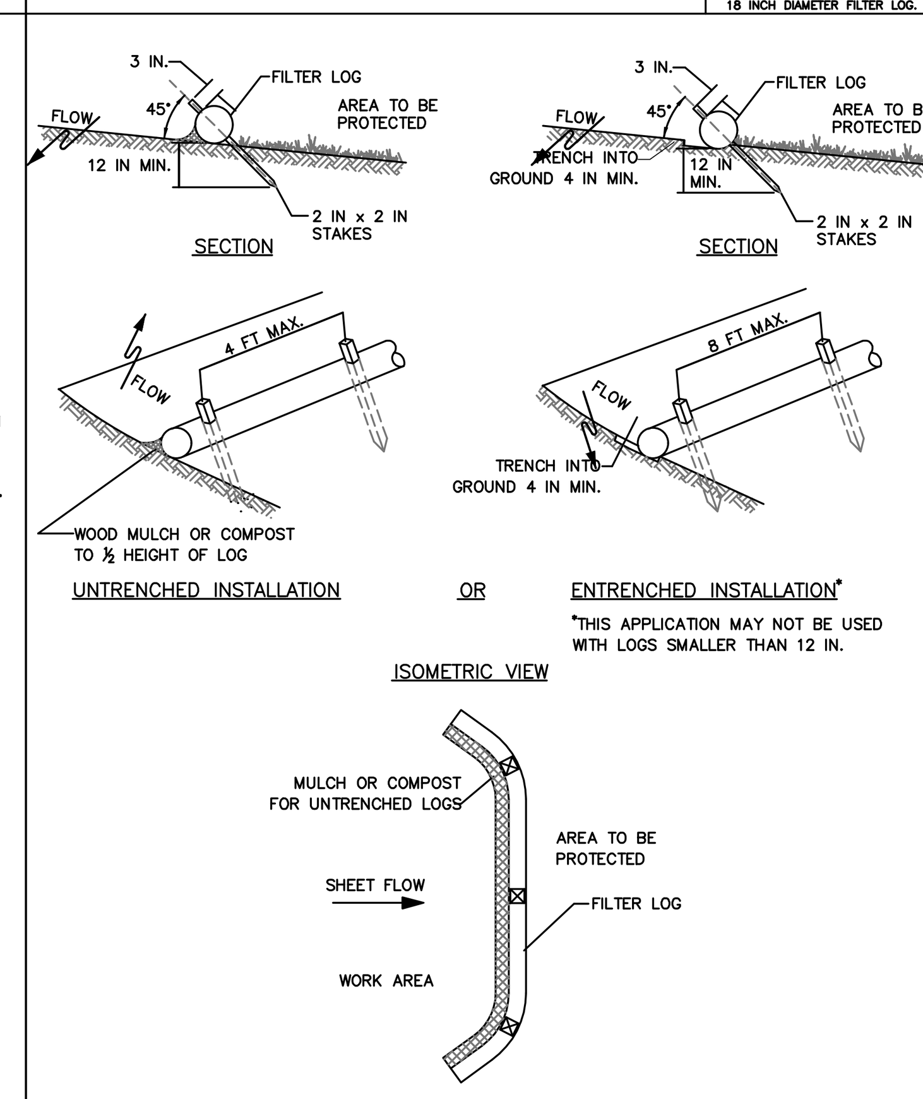
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF ½ THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

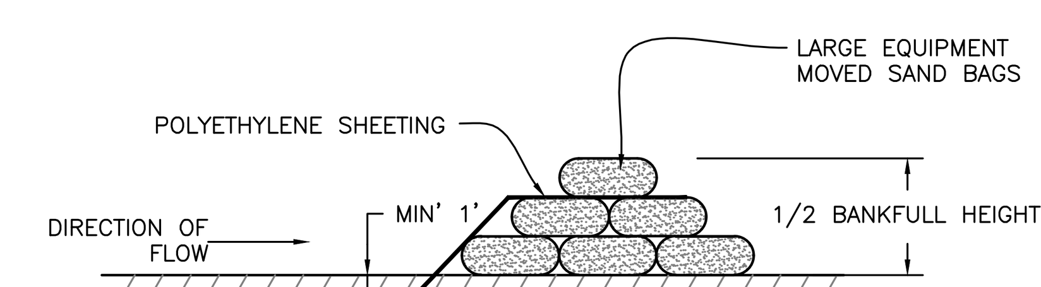
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

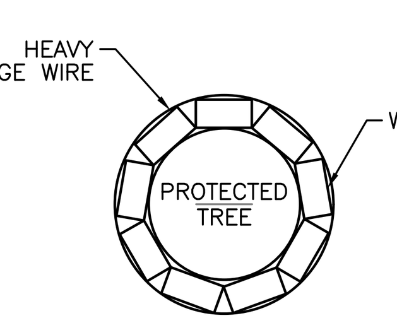
TREE PROTECTION NOTES

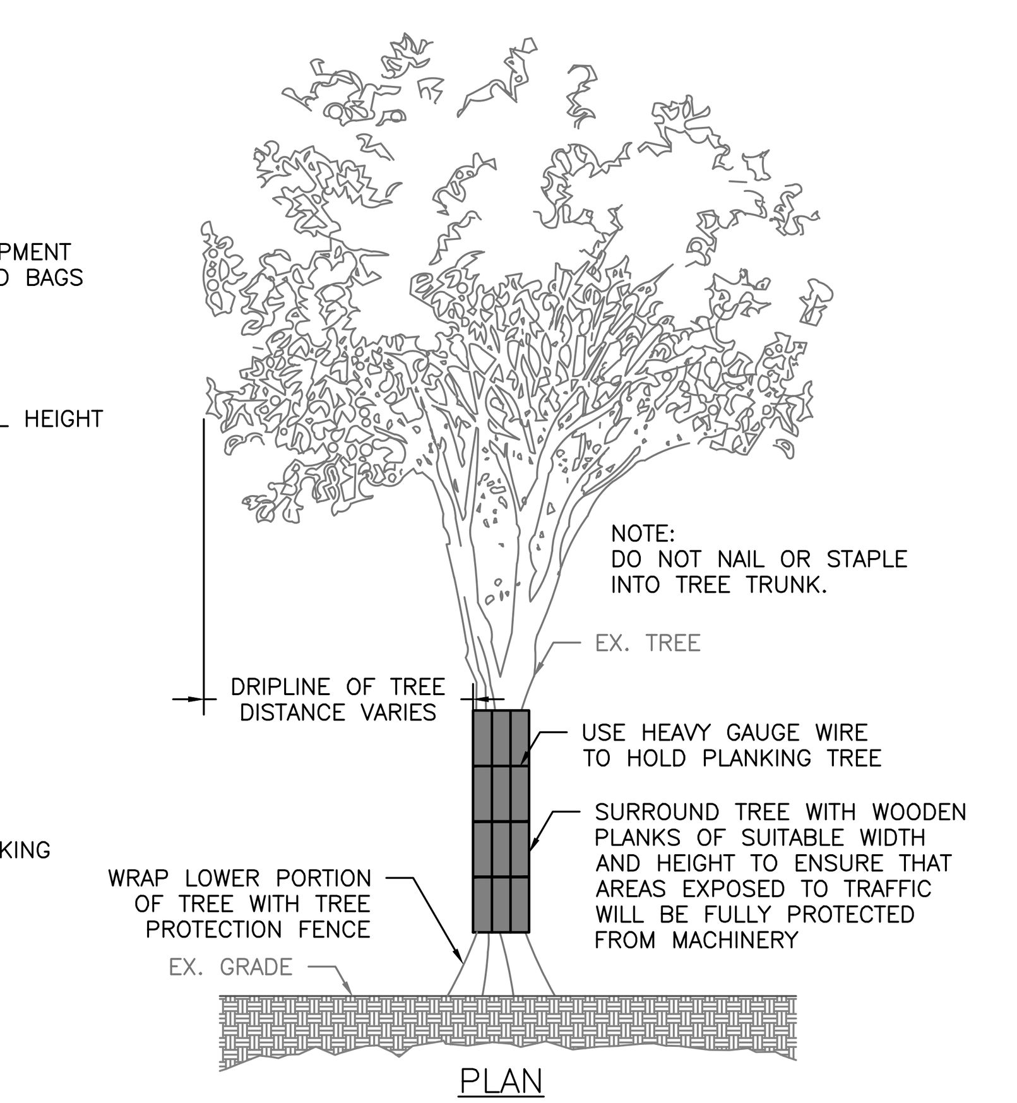
1. ALL TREES WITHIN THE LIMIT OF DISTURBANCE THAT ARE NOT DESIGNATED FOR REMOVAL SHALL BE PROTECTED AS PER THE TREE PROTECTION AND PLANKING DETAILS. TREE PLANKING SHALL BE UTILIZED FOR TREES THAT ARE DIRECTLY ADJACENT TO OR HAVE THE POTENTIAL TO BE DAMAGED BY MACHINERY. TREE PROTECTION FENCING SHALL BE USED WHEN THERE IS ADEQUATE ROOM TO AVOID DAMAGING THE TREE DURING CONSTRUCTION. IN ADDITION, THE FOLLOWING NOTES SHALL BE APPLICABLE:
2. THE CONTRACTOR SHALL AVOID THE PASSAGE OF HEAVY CONSTRUCTION EQUIPMENT WITHIN THE TREE DRIP LINE. WHEN NECESSARY, THE CONTRACTOR SHALL INSTALL TIMBER MATS OVER A 4" MULCH LAYER AND MINIMIZE PASSAGE.
3. WHEN TREE LIMBS ARE THREATENED BY CONSTRUCTION EQUIPMENT, THE CONTRACTOR MUST COMPLETE LIMB PRUNING PRIOR TO THE CONTINUATION OF WORK.
4. WHEN EXCAVATION IS PROPOSED WITHIN THE TREE DRIP LINE, THE CONTRACTOR MUST COMPLETE ROOT PRUNING PRIOR TO THE CONTINUATION OF WORK.
5. IF REQUIRED BY THE OWNER/DEVELOPER, ROOT AND LIMB PRUNING WILL BE PERFORMED EXCLUSIVELY BY AN INTERNATIONAL SOCIETY OF ARBORICULTURE CERTIFIED ARBORIST WHO IS ALSO A MARYLAND DEPARTMENT OF NATURAL RESOURCES LICENSED TREE EXPERT. THE SAME PERSON MUST HOLD BOTH TITLES.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE ANY ACTIVITIES WHICH WILL REQUIRE ROOT OR LIMB PRUNING AND SEQUENCE SITE OPERATIONS SUCH THAT THE WORK SCHEDULE IS NOT IMPACTED.
7. THE CONTRACTOR SHALL FINE GRADE AROUND TREES WITH SMALL EQUIPMENT OR HAND GRADE ONLY. THIS INCLUDES ANY EXCAVATION NECESSARY TO PERFORM ROOT PRUNING.
8. THE CONTRACTOR SHALL NOT REMOVE OR INTENTIONALLY DAMAGE ANY TREES NOT MARKED FOR REMOVAL.



TEMPORARY SAND BAG DIKE–SECTION

SCALE: NOT TO SCALE





TREE PLANKING DETAIL

SCALE: NOT TO SCALE

60% DESIGN

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

EG–SWMENG–______–____ | #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

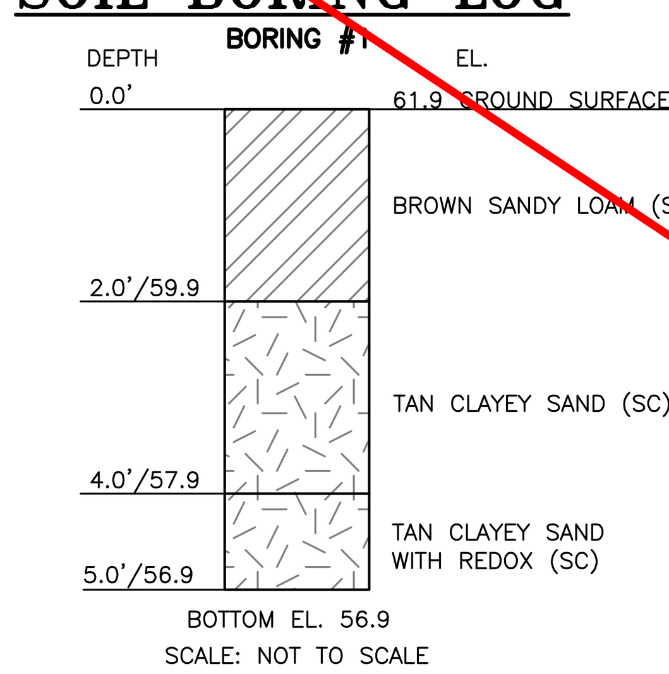
STILLMEADOW STREAM & OUTFALL RESTORATION
SEDIMENT CONTROL NOTES & DETAILS

DRAWN BY: BF/EM	CONTRACT NO : 16–153
DESIGNED BY: JP	SCALE : AS SHOWN
REVIEWED BY: CJS	SHEET 40 OF 43
	DATE : 06/05/18

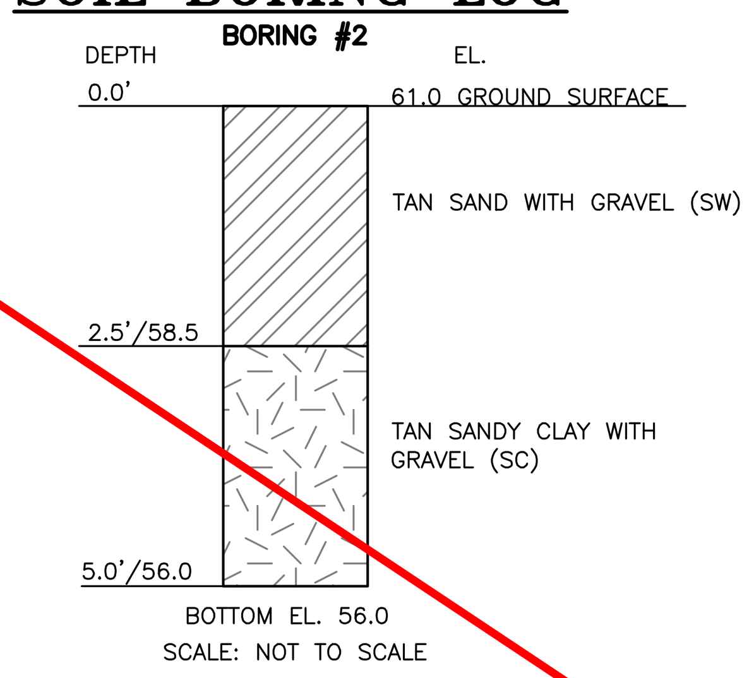
SCALE : 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_SR\CAD Files\Sheet Files\4_3801_SMSR_ESC05.dwg

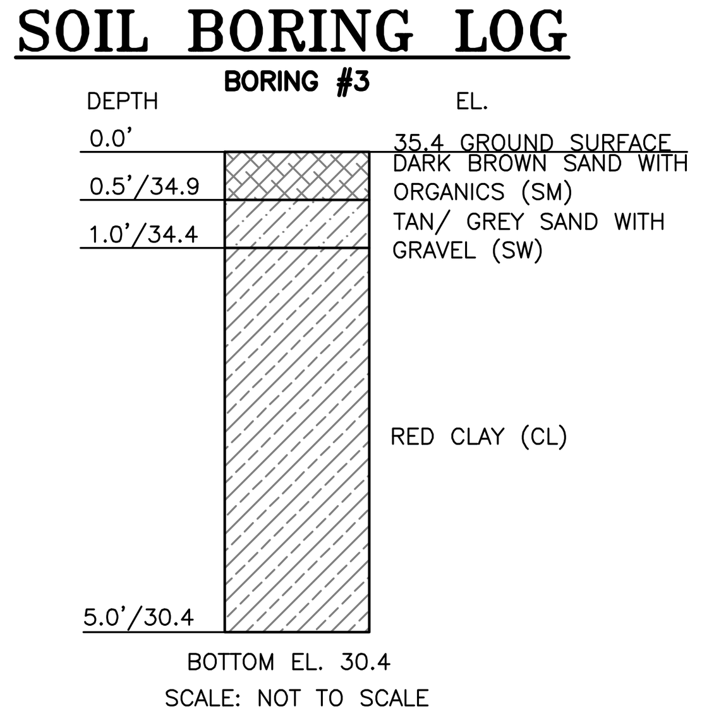
SOIL BORING LOG



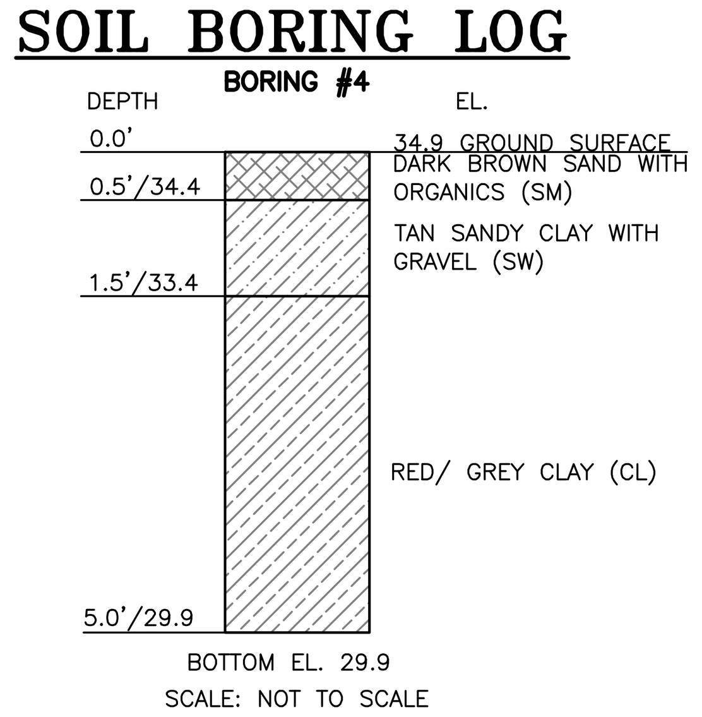
SOIL BORING LOG



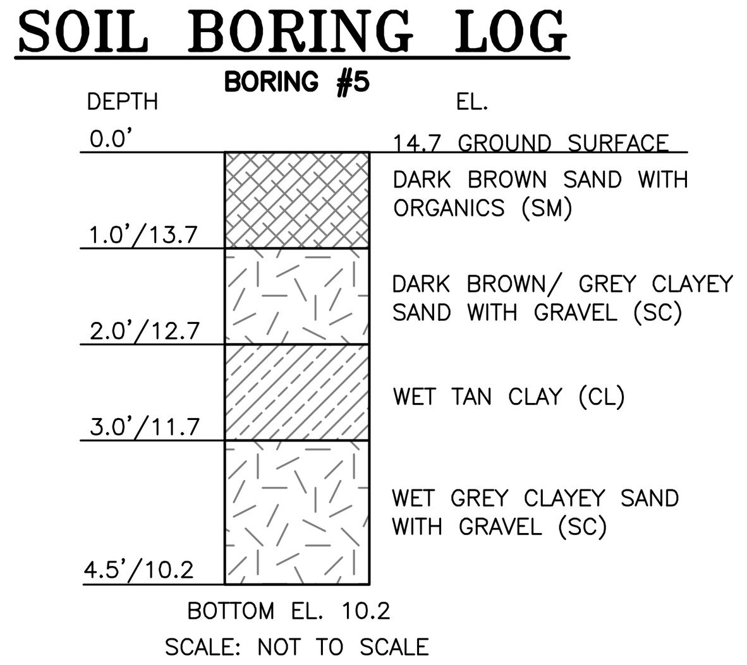
SOIL BORING LOG



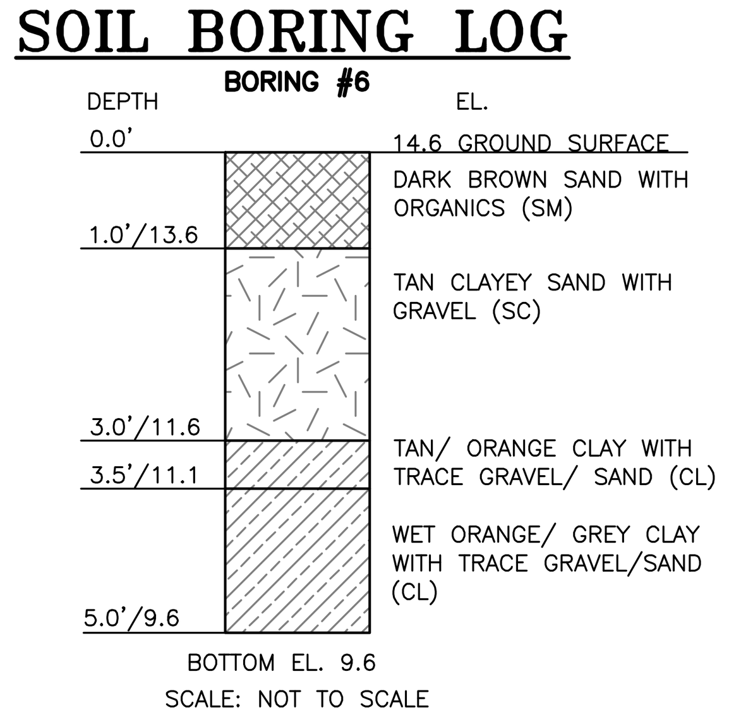
SOIL BORING LOG



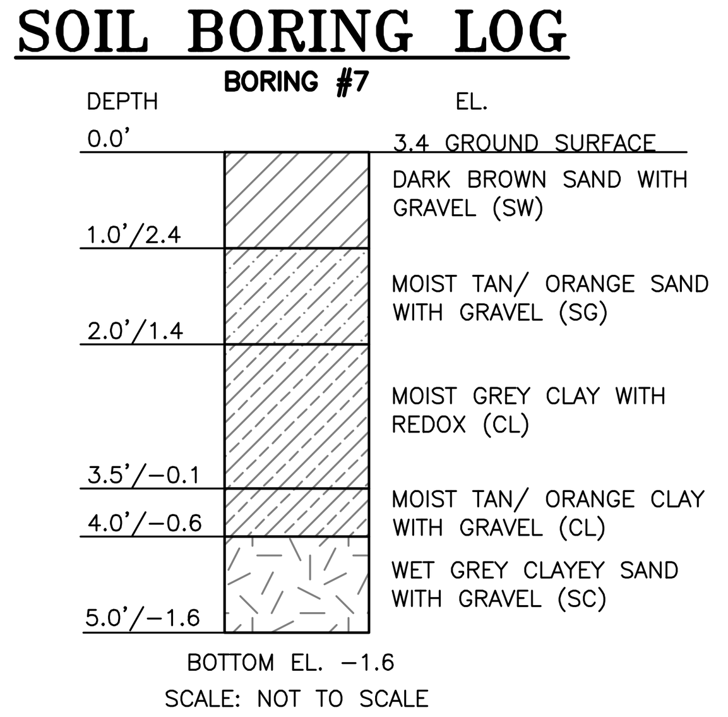
SOIL BORING LOG



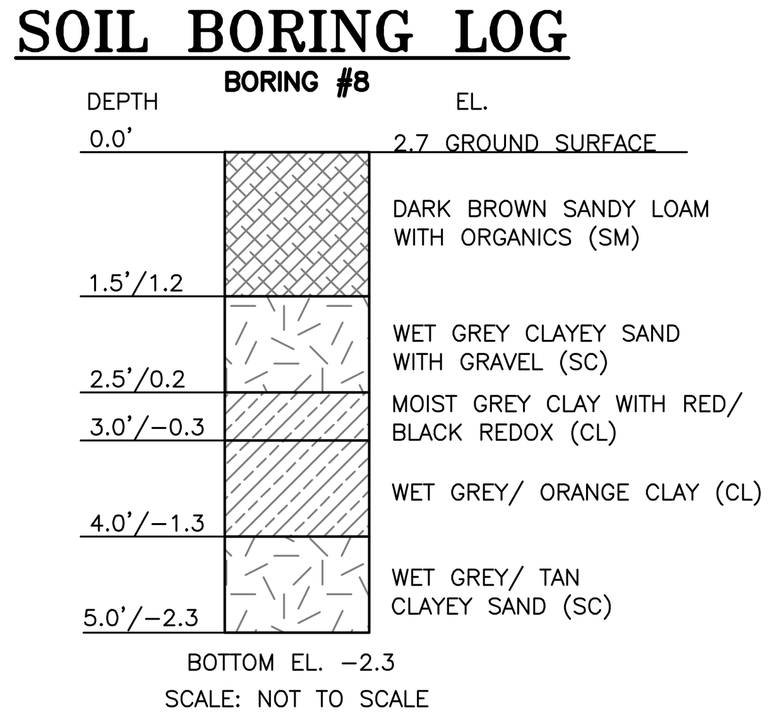
SOIL BORING LOG



SOIL BORING LOG



SOIL BORING LOG



GENERAL GEOTECHNICAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUBGRADE INSPECTIONS AND SOIL COMPACTION TESTING ASSOCIATED WITH THE PROPOSED WORK. THIS WORK SHALL BE COMPLETED BY OR UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MARYLAND, IF REQUESTED BY THE OWNER/DEVELOPER OR AS INDICATED ON THE APPROVED PLANS. THIS ENGINEER IS HEREON REFERRED TO AS THE GEOTECHNICAL ENGINEER AND SHALL BE FROM AN INDEPENDENT FIRM FROM THAT OF THE CONTRACTOR.

2. ALL FILL AREAS SHALL BE CLEANED OF ALL VEGETATION AND DEBRIS, STRIPPED OF ALL TOPSOIL, AND THEN SCARIFIED TO A MINIMUM DEPTH OF 12 INCHES PRIOR TO THE PLACEMENT OF FILL. FILL MATERIAL SHALL BE PLACED IN CONTROLLED LIFTS WITH A MAXIMUM THICKNESS OF 8" PRIOR TO COMPACTION THAT IS CONTINUOUS OVER THE ENTIRE AREA WHERE FILL IS TO BE PLACED. EACH LAYER OF FILL SHALL BE COMPACTED WITH THE MINIMUM NUMBER OF PASSES NECESSARY TO PRODUCE A FULL ASYMPTOTIC COMPACTION.

3. FOR STRUCTURAL AREAS, UNLESS OTHERWISE NOTED BY THE APPROVED PLANS, COMPACTION SHALL BE CARRIED OUT WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT TO A DRY DENSITY OF 95% OF THE MAXIMUM DENSITY (STANDARD PROCTOR DENSITY PER ASTM D–698 AND AASHTO METHOD T–99).

4. FOR VEGETATIVE AREAS, UNLESS OTHERWISE NOTED BY THE APPROVED PLANS, COMPACTION SHALL BE CARRIED OUT AT A LESS THAN OPTIMUM MOISTURE CONTENT (E.G., AT A WATER CONTENT OF LESS THAN 13% ON A SOIL HAVING AN OPTIMUM CONTENT OF 15%) TO A DRY DENSITY OF BETWEEN 80% AND 85% OF THE MAXIMUM DENSITY (STANDARD PROCTOR DENSITY PER ASTM D–698).

5. ALL SOILS USED IN FILL AND BACKFILL MUST BE MOISTENED OR AERATED TO WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT. WHERE THE SOIL LAYER IS TOO DRY, THE CONTRACTOR MUST APPLY WATER UNIFORMLY USING APPROVED EQUIPMENT TO INCREASE THE MOISTURE CONTENT TO WITHIN 2% OF THE OPTIMUM. WHERE THE SOIL LAYER IS TOO WET, THE CONTRACTOR MUST DRY THE SOILS BY PLOWING OR DISKING TO AERATE THE SOIL AND REDUCE THE MOISTURE CONTENT TO WITHIN 2% OF THE OPTIMUM.

6. IF THE EXISTING ONSITE MATERIAL IS ROCKY, THEN THE SAME CAN BE USED UP TO 9 INCHES BELOW THE FINAL ELEVATION OR SUBBASE. THE REMAINING FILL MUST BE SELECT EARTH FILL. SOFT SPOTS IDENTIFIED DURING COMPACTION SHALL BE UNDERCUT AND BACKFILLED APPROPRIATELY.

7. ALL SELECT EARTH FILL SHALL BE FREE FROM ORGANICS, FROZEN MATERIAL, AND ROCKS/STONES GREATER THAN 2" INCHES IN ANY DIMENSION. ALL FILL MATERIAL MUST BE FREE FROM WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR OTHER DELETERIOUS MATERIALS.

8. ALL IMPORTED EARTH FILL MATERIAL SHALL HAVE A MINIMUM DENSITY OF 105 POUNDS PER CUBIC FOOT FOR THE MAXIMUM DRY DENSITY ACCORDING TO AASHTO T–180, METHOD C; AND SHALL NOT HAVE A LIQUID LIMIT GREATER THAN 30 NOR A PLASTICITY INDEX GREATER THAN 6 ACCORDING TO ASTM D–4318. ALL OTHER MATERIALS SHALL MEET THE REQUIREMENTS STATED IN CATEGORY 900 OF THE LATEST EDITION OF THE MARYLAND STATE HIGHWAY ADMINISTRATION (MSHA) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.

9. NRCS–MD POND CODE NO. 378 STANDARDS/SPECIFICATIONS (MD–378) SHALL SUPERSEDE THESE NOTES FOR ANY FILL SUBJECT TO MD–378 WHEN THESE NOTES ARE LESS STRINGENT AND/OR IN THE CASE OF CONFLICT. ANY REFERENCE TO THE ENGINEER IN THE MD–378 SHALL BE THE PROFESSIONAL ENGINEER WHO SIGNED AND SEALED THE DESIGN PLANS. ANY REFERENCE TO THE GEOTECHNICAL ENGINEER SHALL BE THE GEOTECHNICAL ENGINEER IN THESE GENERAL NOTES.

10. THE CONTRACTOR SHALL SUBMIT ALL REQUIRED PROCTOR DENSITY RESULTS OF TESTED FILL TO THE OWNER/DEVELOPER FOR REVIEW AND ACCEPTANCE. AT A MINIMUM, WHEN TESTING IS REQUIRED, COMPACTION TESTS SHALL BE COMPLETED FOR EVERY LIFT OF FILL AND THE TESTING FREQUENCY SHALL BE AT LEAST ONCE PER 150 LINEAR FEET OF TRENCH OR ONCE PER 1,500 SQUARE FEET OF FILL. AT A MINIMUM, WHEN TESTING IS REQUIRED, THERE SHALL BE AT LEAST ONE COMPACTION TEST PER LIFT AND AT LEAST TWO COMPACTION TESTS PER DAY. THE GEOTECHNICAL ENGINEER SHALL SUPPLY THE OWNER/DEVELOPER WITH CERTIFIED COMPACTION TEST RESULTS, INCLUDING CERTIFICATION OF PIPE BEDDING SUBGRADE AND/OR FILL SUBGRADE, WHERE APPROPRIATE.

11. ALL REQUIRED INSPECTIONS, TESTS, SUPPORTING DATA, REPORTS, AND CERTIFICATIONS SHALL BE PROVIDED TO THE OWNER/DEVELOPER AND SHALL BE SIGNED AND SEALED BY THE GEOTECHNICAL ENGINEER. DAILY INSPECTION REPORTS, IF REQUESTED, MAY BE PROVIDED WITHOUT BEING IMMEDIATELY SIGNED AND SEALED BY THE GEOTECHNICAL ENGINEER. THESE REPORTS SHALL BE COMPILED, REVIEWED, SIGNED AND SEALED, AND SUBMITTED TO THE OWNER/DEVELOPER NO LATER THAN 30 DAYS AFTER THE COMPLETION OF THE PROJECT.

MD–378 CONSTRUCTION SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD–378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25–FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

MATERIAL THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER.

MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

PLACEMENT AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ± 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T–99 (STANDARD PROCTOR).

CUT OFF TRENCH THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

EMBANKMENT CORE THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100–200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM–CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS (POLYMER COATED STEEL PIPE) STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M–245 & M–246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

   MATERIALS (ALUMINUM COATED STEEL PIPE)
   – THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M–274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M–190 TYPE A.

   ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

   MATERIALS (ALUMINUM PIPE) THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M–196 OR M–211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M–190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI–SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI–SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

   ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE–ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PREPUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12INCH WIDE STANDARD LAP TYPE BAND WITH 12INCH WIDE BY 3/8–INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12–INCH WIDE HUGGER TYPE BAND WITH O–RING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24–INCH WIDE BY 3/8–INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

   HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

6. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE – ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C–361.

2. BEDDING REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING/CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING/CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE – THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS PVC PIPE SHALL BE PVC–1120 OR PVC–1220 CONFORMING TO ASTM D1785 OR ASTM D–2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" 10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI–SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.

3. BEDDING –THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

DRAINAGE DIAPHRAGMS WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXTILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD–342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

ROXBURY COURT EXISTING TREE SURVEY

TREE NUMBER	DBH (INCHES)	LATIN NAME	COMMON NAME	CONDITION/NOTES
TR 400	12.0	ACER SACCHARINUM	SILVER MAPLE	GOOD
TR 401	22.0	PINUS STROBUS	EASTERN WHITE PINE	GOOD
TR 402	17.9	PINUS TAEDA	LOBLOLLY PINE	GOOD
TR 403	17.0	ACER SACCHARINUM	SILVER MAPLE	GOOD
TR 404	17.5	ZELKOVA SERRATA	JAPANESE ZELKOVA	GOOD
TR 405	29.3	PINUS STROBUS	EASTERN WHITE PINE	GOOD
TR 406	14.9	PAULOWNIA TOMENTOSA	PRINCESS TREE	GOOD
TR 407*	14.9	ACER RUBRUM	RED MAPLE	GOOD
TR 408*	17.0	PICEA ABIES	NORWAY SPRUCE	GOOD
TR 409*	25.2	LIRIODENDRON TULIPIFERA	TULIP POPLAR	GOOD
TR 410*	32.7, 22.5	CARYA TOMENTOSA	MOCKERNUT HICKORY	MULTI–STEM, FAIR
TR 411*	18.1	ACER RUBRUM	RED MAPLE	GOOD
TR 412*	16.1	LIRIODENDRON TULIPIFERA	TULIP POPLAR	GOOD
TR 413	15.7, 15.5	PRUNUS SEROTINA	BLACK CHERRY	MULTI–STEM, GOOD
TR 414	23.9	PAULOWNIA TOMENTOSA	PRINCESS TREE	GOOD
TR 415*	18.0	CARYA TOMENTOSA	MOCKERNUT HICKORY	GOOD
TR 416*	13.0	PRUNUS SEROTINA	BLACK CHERRY	GOOD
TR 417*	13.0	PRUNUS SEROTINA	BLACK CHERRY	GOOD
TR 418*	34.0	QUERCUS FALCATA	SOUTHERN RED OAK	GOOD
TR 419*	23.4	LIRIODENDRON TULIPIFERA	TULIP POPLAR	GOOD
TR 420*	33.5	LIRIODENDRON TULIPIFERA	TULIP POPLAR	FAIR (CAVITY)
TR 421*	32.2	ACER SACCHARINUM	SILVER MAPLE	GOOD
TR 422*	29.6	LIRIODENDRON TULIPIFERA	TULIP POPLAR	FAIR (CAVITY)
TR 423*	12.4	PRUNUS AVIUM	SWEET CHERRY	GOOD
TR 424*	18.0	PRUNUS SEROTINA	BLACK CHERRY	POOR
TR 425*	12.3	PRUNUS SEROTINA	BLACK CHERRY	GOOD
TR 426*	15.8	PRUNUS SEROTINA	BLACK CHERRY	FAIR (VINES)
TR 427*	26.4	QUERCUS PRINUS	CHESTNUT OAK	GOOD
TR 428*	16.0	CARYA TOMENTOSA	MOCKERNUT HICKORY	GOOD
TR 429*	25.8	PAULOWNIA TOMENTOSA	PRINCESS TREE	FAIR
TR 430	27.8	LIRIODENDRON TULIPIFERA	TULIP POPLAR	FAIR (VINES)
TR 431	12.8	ACER RUBRUM	RED MAPLE	GOOD
TR 432	20.5	PRUNUS SEROTINA	BLACK CHERRY	FAIR (VINES)
TR 433	19.0	PRUNUS SEROTINA	BLACK CHERRY	FAIR (VINES)
TR 434	17.2, 14.9	PRUNUS SEROTINA	BLACK CHERRY	MULTI–STEM, FAIR (VINES)
TR 435	21.0	LIRIODENDRON TULIPIFERA	TULIP POPLAR	FAIR
TR 436*	17.0	QUERCUS PRINUS	CHESTNUT OAK	GOOD
TR 437*	34.0	QUERCUS FALCATA	SOUTHERN RED OAK	GOOD
TR 438*	12.5	CARYA GLABRA	PIGNUT HICKORY	GOOD
TR 439*	12.2	PRUNUS SEROTINA	BLACK CHERRY	GOOD
TR 440*	15.3	PRUNUS AVIUM	SWEET CHERRY	GOOD
TR 441*	15.8, 5.2	MORUS RUBRA	RED MULBERRY	MULTI–STEM, POOR
TR 442*	15.3	QUERCUS RUBRA	NORTHERN RED OAK	FAIR
TR 443	13.2	QUERCUS RUBRA	NORTHERN RED OAK	GOOD
TR 444	13.0	PRUNUS SEROTINA	BLACK CHERRY	POOR
TR 445	13.8	CARYA GLABRA	PIGNUT HICKORY	GOOD
TR 446	17.9	QUERCUS COCCINEA	SCARLET OAK	GOOD
TR 447	16.8	ACER SACCHARINUM	SILVER MAPLE	GOOD
TR 448*	18.0	ACER SACCHARINUM	SILVER MAPLE	GOOD
TR 449*	18.8	ACER SACCHARINUM	SILVER MAPLE	GOOD
TR 450*	44.2	LIRIODENDRON TULIPIFERA	TULIP POPLAR	FAIR
TR 451	14.9	PRUNUS SEROTINA	BLACK CHERRY	GOOD
TR 452	14.9	PRUNUS SEROTINA	BLACK CHERRY	GOOD
TR 453	16.1	PRUNUS SEROTINA	BLACK CHERRY	GOOD
TR 454	13.5	PRUNUS SEROTINA	BLACK CHERRY	POOR (VINES)
TR 455	12.2	PRUNUS SEROTINA	BLACK CHERRY	FAIR (VINES)
TR 456	14.0	PINUS STROBUS	EASTERN WHITE PINE	GOOD
TR 457	13.5	ACER SACCHARINUM	SILVER MAPLE	GOOD
TR 458	28.5	PINUS STROBUS	EASTERN WHITE PINE	GOOD
TR 459	15.5	PRUNUS SEROTINA	BLACK CHERRY	GOOD

* TREES TO BE REMOVED

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

60% DESIGN

EG–SWMENG–______–____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com

BAYLAND JOB NO. 4_3801

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
RC EXISTING TREE TABLE & NOTES

DRAWN BY: BF
DESIGNED BY: JP
REVIEWED BY: CJS

CONTRACT NO : 16–153
SCALE : AS SHOWN
SHEET 41 OF 43
DATE : 06/05/18

SCALE : 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_OVERALL\CAD Files\Sheet Files\4_3801_DTL02.dwg

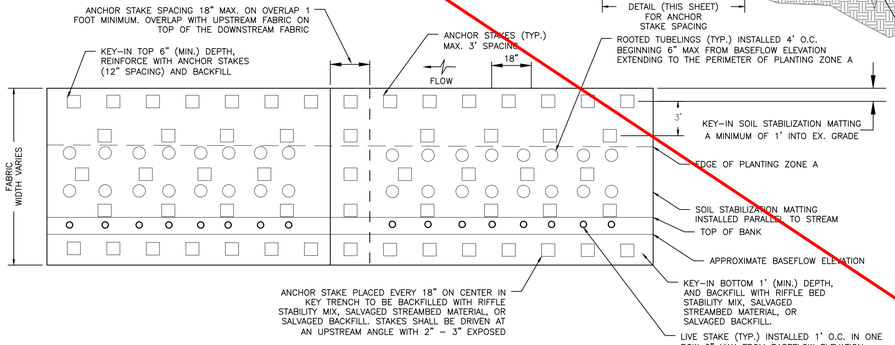
NOTE: TREES AND SHRUBS SHALL BE PLANTED AS DIRECTED BY COUNTY PROJECT MANAGER IN THE FIELD.

LANDSCAPE NOTES

1. ALL PLANT SPECIES SHALL BE NATIVE TO THE CHESAPEAKE AND ATLANTIC COASTAL BAYS REGION BASED ON THE U.S. FISH AND WILDLIFE SERVICE PUBLICATION, NATIVE PLANTS FOR WILDLIFE HABITAT AND CONSERVATION LANDSCAPING.
2. SPECIES CLASSIFICATION (CANOPY TREE, UNDERSTORY TREE, ETC.) IS IN ACCORDANCE WITH MATURE HEIGHTS AS SET FORTH IN THE U.S. FISH AND WILDLIFE SERVICE PUBLICATION, NATIVE PLANTS FOR WILDLIFE HABITAT AND CONSERVATION LANDSCAPING.
3. SPECIES HAVE BEEN SELECTED BASED ON AN ANALYSIS OF SURROUNDING NATIVE FOREST AND DEVELOPED WOODLAND COVER.

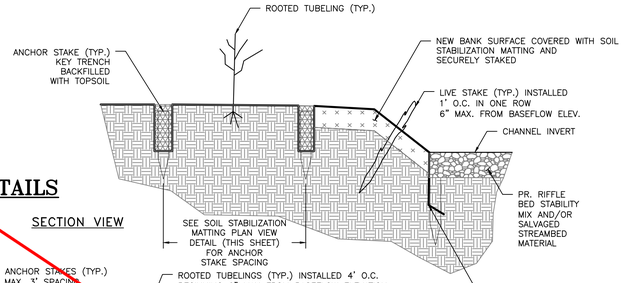
SOIL STABILIZATION MATTING DETAILS

NOT TO SCALE

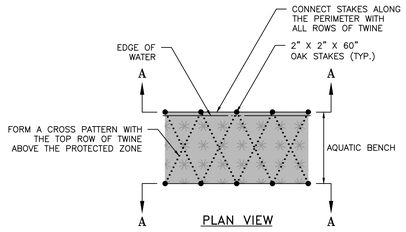


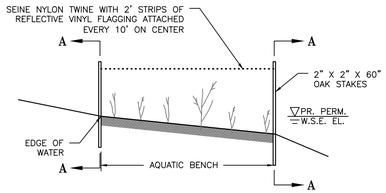
1. ALL PROPOSED STREAMBANKS TO BE STABILIZED WITH SOIL STABILIZATION MATTING.
2. SOIL STABILIZATION MATTING SHALL BE A WOVEN MATTING OF COIR MADE FROM HIGH STRENGTH COCONUT FIBER.
3. SOIL STABILIZATION MATTING SHALL BE A MINIMUM OF 0.30 INCHES THICK, WITH A MINIMUM WEIGHT OF 19 OUNCES PER SQUARE YARD.
4. AREAS TO BE COVERED WITH SOIL STABILIZATION MATTING SHALL BE RAKED TO GRADE, AND ANY ROCKS OR OTHER DEBRIS LARGER THAN 2 IN. SHALL BE REMOVED. NATIVE FLOODPLAIN SEED MIX SHALL BE APPLIED TO THESE AREAS AT A RATE OF 2 LB/1000 FT^2.

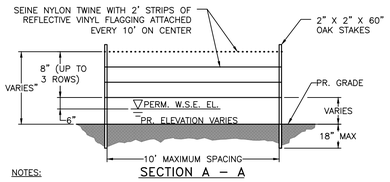
SECTION VIEW



PLAN VIEW







SECTION A – A

NOTES:

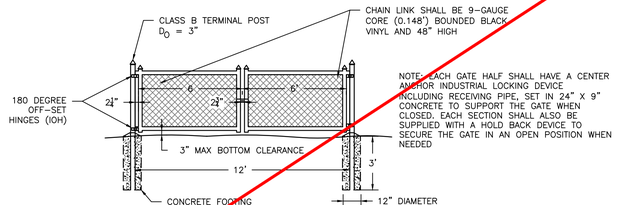
1. OAK STAKES SHALL BE SPACED A MAXIMUM OF 10' O/C. WITH A MINIMUM OF TWO ROWS OF STAKES INSTALLED ALONG THE INNER AND OUTER PERIMETERS OF THE AQUATIC BENCH.
2. THE FIRST ROW OF SEINE NYLON TWINE SHALL BE PLACED A MINIMUM OF 6" OFF THE WATER SURFACE, WITH EACH SUBSEQUENT ROW 8" IN SEPARATION ALONG THE INNER AND OUTER PERIMETER AND SHALL BE STRUNG FROM EACH STAKE TO EVERY ADJACENT STAKE WITHIN THE SAME ROW.
3. THE SEINE NYLON TWINE SHALL BE STRUNG FROM EVERY STAKE TO THE CLOSEST TWO STAKES IN ADJACENT ROWS TO FORM CRISS-CROSS PATTERN ALONG THE TOPMOST ROW.
4. THE SEINE NYLON TWINE SHALL BE SECURELY FASTENED TO THE STAKE AT THE APPROPRIATE ELEVATION ON THE POST.
5. 2' STRIPS OF FLUORESCENT COLORED REFLECTIVE VINYL FLAGGING SHALL SECURELY FASTENED TO THE SEINE NYLON TWINE AT A MAXIMUM 10' O/C BETWEEN THE OAK STAKES. THE FLAGGING SHALL BE TIED TO THE SEINE NYLON TWINE IN THE MIDDLE TO PRODUCE TWO STREAMERS EACH APPROXIMATELY 12" IN LENGTH.
6. THE GOOSE PROTECTION FENCING SHALL COMPLETELY ENCLOSE THE AQUATIC BENCH AND PREVENT GOOSE ACCESS TO THE WATER FROM LAND AND VISE VERSA.
7. THE FENCING MUST REMAIN IN PLACE UNTIL THE VEGETATION HAS HAD TIME TO BECOME ESTABLISHED. AFTER TWO GROWING SEASONS THE FENCING SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.

GOOSE PROTECTION FENCING DETAIL

SCALE: NOT TO SCALE

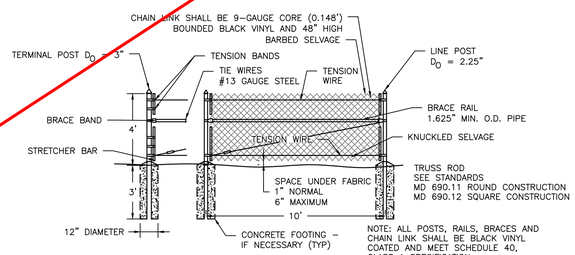
GENERAL PLANTING NOTES

1. ALL PLANT MATERIALS SHALL BE NURSERY GROWN AND SHALL CONFORM TO AMERICAN ASSOCIATION OF NURSERYMEN, INC. STANDARDS.
2. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL UTILITY LOCATIONS PRIOR TO PLANTING MATERIAL. IF CONFLICTS ARISE, BAYLAND, INC. MUST BE NOTIFIED PRIOR TO ANY GROUND BREAKING.
3. WETLAND PLANTING WILL BE ACCOMPLISHED BETWEEN MARCH 15TH AND MAY 15TH (SPRING PLANTING SEASON) OR SEPTEMBER 15TH AND NOVEMBER 15TH (FALL PLANTING SEASON).
4. TREES AND SHRUBS SHALL BE PLANTED FROM MARCH 1 TO JUNE 15 AND FROM SEPTEMBER 15 TO DECEMBER 15. PLANTING MAY BE CONTINUED DURING THE WINTER MONTHS PROVIDING THERE IS NO FROST IN THE GROUND AND FROST FREE TOPSOIL PLANTING MIXTURES ARE USED.
5. NO CONTAINER-GROWN MATERIAL SHALL BE PLANTED IF NOT ACCLIMATED TO THE CURRENT WEATHER CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR GENERAL MAINTENANCE INCLUDING WATERING.
6. NO AQUATIC BENCH PLANTINGS SHALL BE INSTALLED UNTIL POND HAS BEEN ALLOWED TO FILL AND BENCH HAS BECOME SATURATED. IMMEDIATELY INSTALL GOOSE PROTECTION FENCING (DETAIL THIS SHEET) AFTER INSTALLATION OF AQUATIC BENCH PLANTINGS).
7. ALL PLANTING MATERIAL AND PLANTING METHODS SHALL CONFORM TO CONSTRUCTION SPECIFICATIONS.
8. DISTURBED AREAS WITHIN THE LIMITS OF DISTURBANCE SHALL BE STABILIZED PER THE DETAILS AND SPECIFICATIONS FOR VEGETATIVE ESTABLISHMENT.
9. IF A MINIMUM COVERAGE OF 80% IS NOT ACHIEVED IN THE PLANTED AQUATIC BENCH AFTER THE SECOND GROWING SEASON, A REINFORCEMENT PLANTING WILL BE REQUIRED.
10. REMOVE GOOSE PROTECTION FENCING AFTER TWO GROWING SEASONS IF THE PLANTS HAVE BECOME ESTABLISHED.



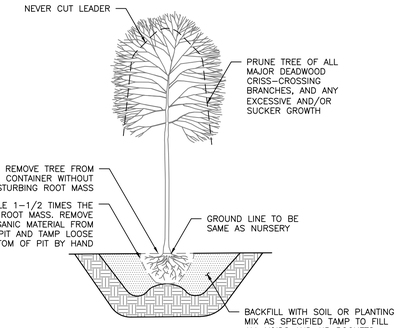
ACCESS GATE DETAIL

SCALE: 1" = 4'



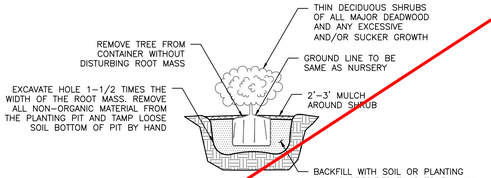
CHAIN LINK FENCE DETAIL

SCALE: 1" = 4'



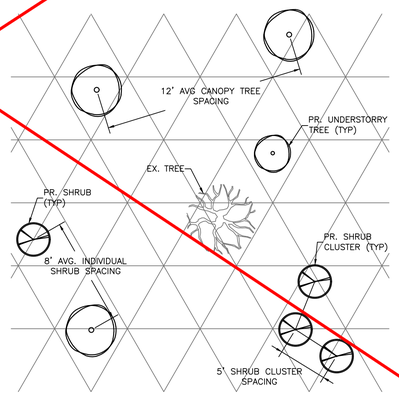
TREE PLANTING – CONTAINER GROWN

SCALE: NOT TO SCALE



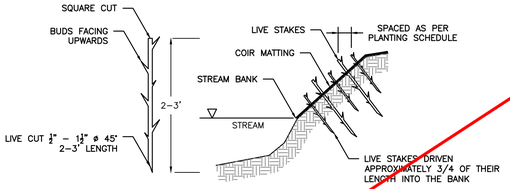
SHRUB PLANTING – CONTAINER GROWN

SCALE: NOT TO SCALE



TYPICAL 30'X30' NATURALIZED PLANTING DETAIL

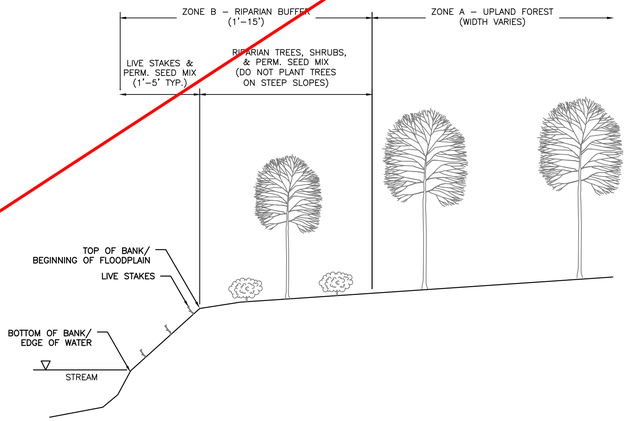
SCALE: NOT TO SCALE



NOTES:
1. NATURAL FIBER MATTING SHALL ONLY BE INSTALLED IN AREAS OF GRADING AND DISTURBANCE.
2. LIVESTAKES SHALL BE INSTALLED DURING THE DORMANT SEASON DECEMBER 1 THROUGH APRIL 1.

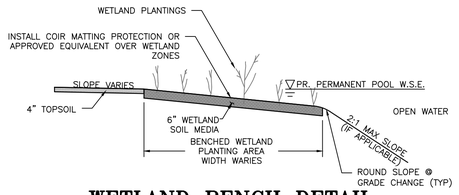
LIVE STAKE DETAIL

SCALE: NOT TO SCALE



TYPICAL RIPARIAN ZONES SECTION

SCALE: NOT TO SCALE

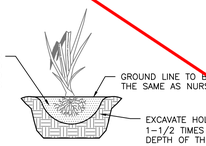


WETLAND BENCH DETAIL

SCALE: NOT TO SCALE

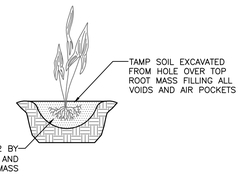
WETLAND SOIL MEDIA

THE SOIL MEDIA SHALL CONSIST OF: 40% ASTM C33 CONCRETE SAND WITH A GRAIN SIZE DIAMETER OF 0.02–0.04", 40% COMPOST AND 20% TOPSOIL WITH LESS THAN 5% CLAY CONTENT.



QUART PLANTING

SCALE: NOT TO SCALE



PLANTING – PLUG

SCALE: NOT TO SCALE

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
PLANTING DETAILS & NOTES

DRAWN BY: JT/EM
DESIGNED BY: JP
REVIEWED BY: CJS

CONTRACT NO : 16-153
SCALE : AS SHOWN
SHEET 42 OF 43
DATE : 06/05/18

EG-SWMENG-_____-_____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_OVERALL\CAD Files\Sheet Files\4_3801_PLNT01.dwg

EXISTING CONDITIONS HYDROLOGY

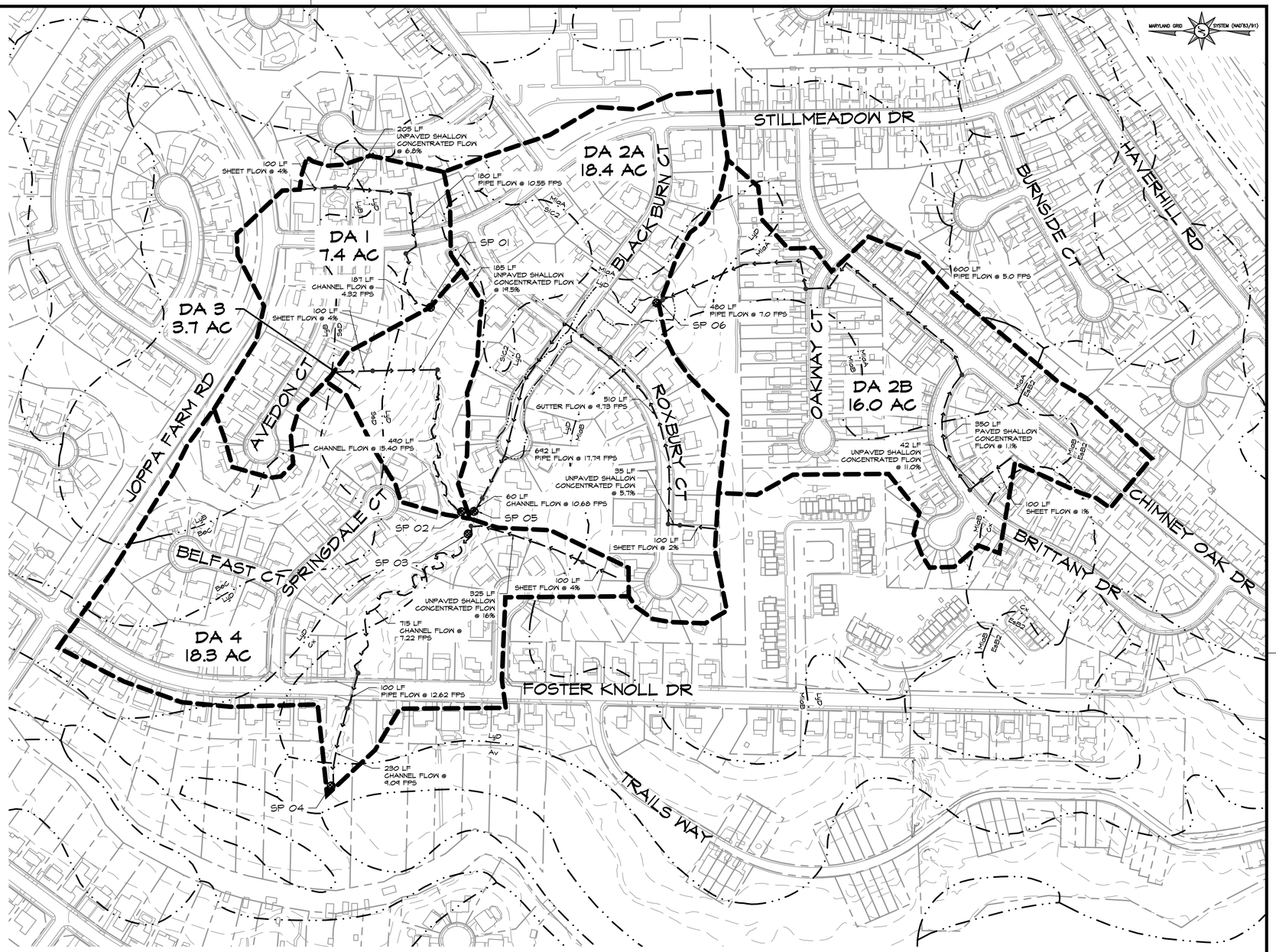
	AREA (AC.)	CN	Tc (hr)	Q_1 (cfs)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
DA 1 (SP01)	7.4	80	0.211	3.92	5.99	16.86	28.24
DA 3	3.7	68	0.374	0.32	0.67	3.78	8.19
SP02	11.1	–	–	4.09	6.43	20.13	35.61
DA 2 (SP05)	34.4	81	0.238	18.66	28.14	76.01	126.15
SP03	45.5	–	–	22.71	34.55	96.06	161.36
DA 4	18.3	80	0.231	9.19	14.11	39.85	66.93
OUTLET (SP04)	63.8	–	–	31.73	48.36	135.11	226.59

PROPOSED CONDITIONS HYDROLOGY

	AREA (AC.)	CN	Tc (hr)	Q_1 (cfs)	Q_2 (cfs)	Q_{10} (cfs)	Q_{100} (cfs)
DA 1 (BMP 1) (SP01)	7.4	80	0.211	3.92	5.99	16.86	28.24
DA 3	3.7	68	0.374	0.32	0.67	3.78	8.19
SP02	11.1	–	–	3.91	5.99	16.86	28.18
DA 2B (RC) (SP06) (TO FACILITY)	16.0	81	0.409	6.22	9.38	26.12	45.13
DA 2B (RC) (SP06) (FROM FACILITY)	–	–	–	1.55	4.99	25.52	44.49
DA 2A	18.4	80	0.193	10.26	15.70	44.20	73.19
SP05 (BLACKBURN COURT OUTFALL)	34.4	–	–	10.41	15.90	60.85	107.90
SP03	45.5	–	–	14.44	22.22	80.85	143.61
DA 4	18.3	80	0.231	9.19	14.11	39.85	66.93
OUTLET (SP04)	63.8	–	–	23.43	35.97	118.25	208.09

SOILS CHART

SYMBOL	SOIL	HSG
Av	ALLUVIAL LAND	D
BeC	BELTSVILLE SILT LOAM (SLOPES 5%–10%)	C
Cx	CUT AND FILL LAND	
EsB2	ELSINBORO LOAM (SLOPES 2%–5%) MODERATELY ERODED	B
EsC2	ELSINBORO LOAM (SLOPES 5%–10%) MODERATELY ERODED	B
LyB	LOAMY AND CLAYEY LAND (SLOPES 0%–5%)	C
LyD	LOAMY AND CLAYEY LAND (SLOPES 5%–15%)	C
MlaA	MATTAPEX SILT LOAM (SLOPES 0%–2%) NORTHERN COASTAL PLAIN	C
MlaB	MATTAPEX SILT LOAM (SLOPES 2%–5%) NORTHERN COASTAL PLAIN	C
SlC2	SASSAFRAS LOAM (SLOPES 10%–15%) MODERATELY ERODED	B
SsD	SASSAFRAS AND JOPPA SOILS (SLOPES 10%–15%)	B



DRAINAGE AREA MAP

SCALE: 1" = 150'

0 75 150 300

1 INCH = 150 FEET

60% DESIGN

REVISIONS

HARFORD COUNTY, MARYLAND

STILLMEADOW STREAM & OUTFALL RESTORATION
DRAINAGE AREA MAP

S/C PLAN # _____ GRA # _____–____

EG–SWMENG–_____–_____ #_____

CLEAR CREEKS CONSULTING
1317 Knopp Road, Jarrettsville, Maryland 21084 (410) 692-2164

BayLand Consultants & Designers, Inc.
"Integrating Engineering and Environment"
7455 New Ridge Road, Suite T Phone: (410) 694-9401
Hanover, Maryland 21076 Fax: (410) 694-9105
www.baylandinc.com
BAYLAND JOB NO. 4_3801

DRAWN BY: EM/BF
DESIGNED BY: FHM
REVIEWED BY: CJS

CONTRACT NO : 16–153
SCALE : AS SHOWN
SHEET 43 OF 43
DATE : 06/05/18

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

Z:\4_3801_STILLMEADOW_STREAM_&_OUTFALL\STILLMEADOW_OVERALL\CAD Files\Sheet Files\4_3801_DA01.dwg